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Test and Evaluation

CAPABILITIES-BASED TEST AND EVALUATION

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This is the second update to Air Force Instruction (AFI) 99-103 which implements Air Force Policy Directive (AFPD) 99-1, *Test and Evaluation Process.* It describes the planning, conduct, and reporting of cost effective test and evaluation (T&E) programs as an efficient continuum of integrated testing known as seamless verification. This AFI implements the policies in Department of Defense Directive (DODD) 5000.1, *The Defense Acquisition System*, and DOD Instruction (DODI) 5000.2, *Operation of the Defense Acquisition System* (collectively called the DOD 5000-series); *National Security Space (NSS) Acquisition Policy 03-01*; Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01, *Joint Capabilities Integration and Development System*, and CJCS Manual (CJCSM) 3170.01, *Operation of the Joint Capabilities Integration and Development System.* This AFI **must be used in conjunction with** AFI 10-601, *Capabilities-Based Requirements Development*, and AFI 63-101, *Operations of Capabilities Based Acquisition System*. For recommended non-mandatory guidance, use the *Defense Acquisition Guidebook.* Any organization conducting T&E may supplement this instruction as desired. This instruction applies to all Air Force organizations, including the Air National Guard, Air Force Reserve Command, major commands (MAJCOM), direct reporting units (DRU), and field operating agencies (FOA). This instruction applies to all acquisition projects and programs regardless of acquisition category (ACAT). Headquarters (HQ) USAF/TE is the sole waiver authority for policies in this AFI. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using AF IMT 847, *Recommendation for Change of Publication*, routed through the functional chain of command. Ensure all records created as a result of processes prescribed in this publication are maintained according to Air Force Manual (AFMAN) 37-123, *Management of Records* (will convert to AFMAN 33-363), and disposed of according to the Air Force Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at https://afrims.amc.af.mil/rds_series.cfm.

SUMMARY OF CHANGES

*This interim change adds a new Chapter 8 for Space Systems Test and Evaluation. It also updates who is responsible for live fire test and evaluation (LFT&E) planning; adds direction for a Sufficiency

of Operational Test Review (SOTR); adds direction about a Capabilities and Limitations (C&L) Report; revises the definition of operational utility evaluation (OUE); modifies lead operational test organization determination criteria for ACAT III and other programs; deletes "spiral" terminology from evolutionary acquisition; requires consideration of concepts of operation (CONOPS) in early T&E planning; adds direction about the System Engineering Plan (SEP); makes the requirement optional for recommendations in operational test reports; adds responsibilities for the USAF Warfare Center; modifies signature requirements for selected TEMPs; modifies when TEMP information is cited in the LCMP; and adds definitions for new terms. Numerous paragraphs throughout the AFI were changed to support these updates. A margin bar indicates newly revised material. Numerous paragraphs throughout the AFI were changed to support this updated policy. An asterisk indicates newly revised or added material.

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Chapter 1

VISION AND IMPLEMENTATION CONCEPTS

1.1. Purpose of Test and Evaluation (T&E). The overarching functions of T&E are to mature system designs, manage risks, identify and help resolve deficiencies as early as possible, and ensure systems are operationally mission capable (i.e., effective and suitable). The Air Force T&E community plans for and conducts integrated testing as an efficient continuum known as seamless verification in collaboration with the requirements and acquisition communities. The T&E community will:

1.1.1. Collaborate with requirements sponsors and system developers to field better systems faster and more cost effectively.

1.1.2. Provide timely, accurate, and affordable information to decision makers to support production and fielding decisions.

1.1.3. Help manage risks during engineering, acquisition, fielding, and sustainment by accurately characterizing system technical and operational performance throughout the system life cycle.

1.1.4. Help the acquisition and sustainment communities acquire and maintain operationally effective, suitable, survivable, and secure systems for Air Force operators.

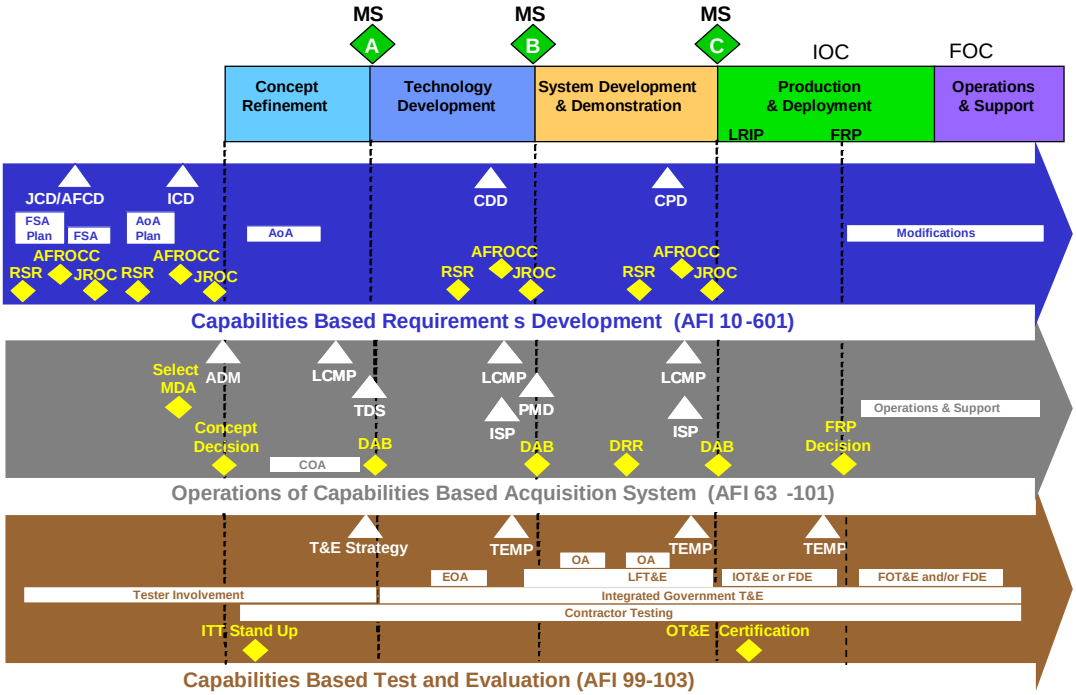
1.1.5. Provide information to operators to allow them to assess mission impacts, develop doctrines, improve requirements, and refine tactics, techniques, and procedures (TTP).

1.2. **The Acquisition Environment.** Agile acquisition is the overarching concept designed to bring new capabilities to operators more quickly. It begins with capabilities-based requirements development and continues with capability-based acquisition, T&E, and rapid fielding of new systems.

***1.2.1. Evolutionary Acquisition (EA).** EA is the DOD's preferred acquisition strategy for delivering warfighting capabilities to operators, and incremental development is the process used to carry out the EA strategy. See Attachment 1 for definitions of these terms.

1.2.2. Collaborative Concepts and Processes. Agile acquisition is based on new concepts and processes described in AFI 10-601, *Capabilities Based Requirements Development*, AFI 63-101, *Operations of Capabilities Based Acquisition System*, and this AFI. **Figure 1.1** shows the acquisition process as the "master clock" for the integration of requirements, acquisition, and T&E events and activities. Variations of **Figure 1.1** are used throughout this AFI to illustrate T&E events during each phase of acquisition.

Figure 1.1. Integration of the Requirements, Acquisition, and T&E Processes.



Note: All acronyms in this figure are listed in **Attachment 1**. Single acquisition management plans (SAMP) will be phased out as life cycle management plans (LCMP) are phased in.

1.2.3. National Security Space (NSS) Acquisition Process. The acquisition and decision making process described in *National Security Space (NSS) Acquisition Policy 03-01* differs from the acquisition process in DODI 5000.2 and AFI 63-101. *NSS 03-01* uses key decision points (KDP) for NSS acquisition programs that occur earlier than typical DOD 5000-series milestones and decision reviews. However, the basic T&E support provided to NSS systems is similar to non-space systems. Whenever NSS systems are tested, testers must refer to *NSS 03-01* for additional guidance.

1.3. Seamless Verification. The seamless verification concept helps testers structure T&E to better support the requirements and acquisition processes. Seamless verification minimizes the transitions between contractor, developmental, and operational testing by implementing integrated test techniques and procedures. Key stakeholders from multiple disciplines must integrate their efforts, produce efficient schedules, eliminate "stovepipes," share information in open T&E databases, identify problems early, engage contractors to fix deficiencies sooner, and ensure systems are ready to enter dedicated operational testing with a high probability of success. Seamless verification is called **integrated testing** in this AFI and does the following:

1.3.1. Provides a new T&E framework to support programs using EA or a single stage of development.

1.3.2. Refocuses T&E of materiel solutions on capabilities-based requirements and operational mission needs instead of traditional pass-fail measurements of specification-like requirements. Capability-based testing ensures T&E strategies and plans are derived from the operational environ-

ment and functionality specified in validated operational capabilities requirements. It requires an understanding of how systems will be employed in operational environments and mandates that T&E strategies and plans be designed to determine whether a new capability solution merits fielding.

1.3.3. Provides T&E data to support the requirement in Title 10, United States Code, for initial operational test and evaluation (IOT&E).

1.3.4. Integrates the various types of T&E described in **Chapter 2** as seamlessly as possible through integrated test teams (ITT).

1.3.5. Requires operational test organizations to take advantage of every opportunity to provide early, written feedback to the program manager (PM) to maximize successful operational testing. **Note**: This AFI uses the term "PM" for any designated person in charge of acquisition activities, to include those prior to MS A (i.e., before a technology project is officially designated an acquisition program).

***1.4. Integrated Test Team (ITT).** An ITT will be formed during the Concept Refinement phase as shown in **Figure 1.1** to create and manage the strategy for T&E for the life of each program. Formal direction for establishing the ITT will be in the new program's first acquisition decision memorandum (ADM). The ITT construct is central to carrying out seamless verification and replaces the old test planning working group (TPWG). The PM and the operational test organization will co-chair the ITT using the general T&E principles outlined in paragraph **1.5**. ITT membership will include representatives from the responsible test organization (RTO), operational test organizations, participating test organizations (PTO), system contractors, and the acquisition, requirements, intelligence, operations, and support communities. Reference paragraphs **3.14** and **4.4** and the *Air Force Test and Evaluation Guidebook* for details about ITT structure, responsibilities, and functions. The Guidebook is available on the HQ USAF/TE portion of the Air Force Portal.

1.5. General T&E Principles. The following T&E principles are based on DOD 5000-series documents and lessons learned. The unifying theme is that all testers must collaborate to the fullest extent possible to make systems better regardless of organizational affiliation. Integrated testing is the preferred way to organize all T&E activities, resources, and information within statutory and regulatory guidelines and sound engineering principles. **Note**: Because the acquisition process is fluid, testers must ensure the **intent** of this AFI is implemented at appropriate times. For example, if a project or program has no Milestone (MS) A, an ITT must be formed at an **equivalent point in time** and carry out all necessary actions.

1.5.1. Tailoring. All T&E strategies and plans must be flexible to fit the needs of acquisition programs consistent with sound systems engineering practices, common sense, statutory and regulatory guidelines, and the time-sensitive nature of operators' requirements. T&E strategies and plans must be tailored for their specific situations.

1.5.2. Early Tester Involvement. The early provision of T&E expertise and operational insight, preferably before the concept refinement phase, is key to successful initiation of new programs.

1.5.3. Early Deficiency Resolution. Deficiencies must be identified and resolved as early as possible to provide efficiency and economy.

1.5.4. Event-Driven Schedules and Exit Criteria. The ITT must plan for adequate time and resources for all T&E activities according to DODD 5000.1. T&E activities must demonstrate the system meets established engineering objectives, capability-based requirements, and exit criteria before moving to the next phase of development. The PM must ensure the system is stable and mature before it is certified ready for dedicated operational testing.

1.6. Applicability. The policies and processes in this AFI are for use by **all** Air Force acquisition programs and projects regardless of ACAT, to include non-ACAT programs, unless otherwise noted. **Note**: See DODI 5000.2, Enclosure E2, for details about ACATs. AFOTEC and each MAJCOM or FOA with designated test responsibilities will establish disciplined processes for planning and executing T&E activities according to this AFI. **Note**: In this AFI, the term "MAJCOM" will include the FOAs, DRUs (except AFOTEC), and other subordinate test organizations. Minor modification programs (i.e., Air Force Form 1067 modifications, etc.) and MAJCOM-directed acquisition programs will comply with the following principles:

1.6.1. A T&E strategy and test plans tailored for the project or program are required.

1.6.2. Operational testing must be conducted and documented to support acquisition and/or fielding decisions.

1.6.3. The overarching principles of integrated testing must be complied with.

1.6.4. Validated T&E data must be shared to the maximum extent possible within the test and acquisition community.

1.7. Areas Not Covered by This AFI. The systems, programs, and activities listed below are not covered by this AFI. Additional items such as T&E range instrumentation may also be excluded after consultation with HQ USAF/TEP. If there is a question of jurisdiction for space and space launch systems, consult with HQ USAF/TEP, SAF/USA, and HQ AFMC/A3F or HQ AFSPC/A5 for guidance.

1.7.1. Nuclear components are governed by joint Department of Defense (DOD)-Department of Energy agreements. However, nuclear and non-nuclear components, sub-systems, and associated logistics support elements that require testing and nuclear certification throughout the system life cycle remain covered as described in AFI 63-103, *Nuclear Weapons Program Management*, and AFI 63-125, *Nuclear Certification Program*.

1.7.2. Industrial maintenance inspections.

1.7.3. Activities associated with the space experimentation program described in AFI 10-1202, *Space Test Program (STP) Management.*

Chapter 2

TYPES OF TEST AND EVALUATION

2.1. Major Types of Testing. Air Force testing falls into two overarching categories, developmental testing and operational testing. If a specific T&E requirement does not fall precisely into one of the following discrete types of testing, consult with HQ USAF/TEP to select and tailor the type of testing that best fits the need. During test planning, these tests will be integrated to the maximum extent possible as described in **Chapters 4** through **6**. All testers must collaborate as an integrated team to generate an overarching T&E strategy and test plans that leverage all available test activities and resources while minimizing redundant testing and waste. The result is an integrated test approach with interlocking test plans that efficiently work together throughout the acquisition program, and not necessarily a single test plan.

2.2. Developmental Testing. Developmental testing is conducted throughout the acquisition and sustainment processes to assist in engineering design and development and verify that critical technical parameters (CTP) have been achieved. Developmental test and evaluation (DT&E) supports the development and demonstration of new materiel or operational capabilities as early as possible in the acquisition life cycle. After full-rate production (FRP) or fielding, DT&E supports the sustainment of systems to keep them current or extend their useful life, performance envelopes, and/or capabilities. As many test activities as practical are conducted in operationally relevant environments without compromising engineering integrity, safety, or security. Developmental testing must lead to and support a certification that the system is ready for dedicated operational testing according to DODI 5000.2, Enclosure E5, and AFMAN 63-119, *Certification of System Readiness for Dedicated Operational Test and Evaluation*. In addition, developmental testing:

2.2.1. Assesses the technological capabilities of systems or concepts in support of requirements activities described in AFI 10-601 (e.g., Analysis of Materiel Approaches, Courses of Action (COA)). Conducts research, development, test, and evaluation (RDT&E) to investigate new concepts and technologies and collect basic scientific and engineering data.

2.2.2. Provides empirical data for cost, schedule, and performance trade-offs.

2.2.3. Evaluates and uses modeling and simulation (M&S) tools and digital system models (DSM); performs verification and validation with actual test data.

2.2.4. Identifies and helps resolve deficiencies as early as possible.

2.2.5. Verifies the extent to which design risks have been minimized.

2.2.6. Verifies compliance with specifications, standards, and contracts.

2.2.7. Characterizes system performance, military utility, and determines system safety.

2.2.8. Quantifies contract technical performance and manufacturing quality.

2.2.9. Ensures fielded systems continue to perform as required in the face of changing operational requirements and threats.

2.2.10. Ensures all new developments, modifications, and upgrades address operational safety, suitability, and effectiveness according to AFI 63-1201, *Life Cycle Systems Engineering.*

2.2.11. Supports aging and surveillance programs, value engineering projects, productivity, reliability, availability and maintainability projects, technology insertions, and other modifications according to AFI 63-1101, *Modification Management*.

2.3. Specialized Types of Developmental Testing.

2.3.1. Qualification Test and Evaluation (QT&E). QT&E is a tailored type of DT&E conducted for commercial-off-the-shelf (COTS) items, non-developmental items (NDI), and government furnished equipment (GFE). Depending on operator requirements, these items may require little or no government funded research and development (R&D), engineering, design, or integration efforts. PMs cannot disregard T&E of COTS, NDI, and GFE simply because these items came from pre-established sources and some pre-existing data may be available. See paragraph **5.15** for more information on COTS, NDI, and GFE.

2.3.2. Production-Related Testing. The PM will ensure T&E is conducted on production items to demonstrate that specifications and performance-based requirements of the procuring contracts have been fulfilled. Defense Contract Management Agency personnel normally oversee this testing at the contractor's facility. Typical tests (defined in **Attachment 1**) include: first article tests (FAT); lot acceptance tests (LAT); pre-production qualification tests (PPQT); production qualification tests (PQT); and production acceptance test and evaluation (PAT&E).

2.4. Live Fire Test and Evaluation (LFT&E). LFT&E is a type of DT&E that provides timely, rigorous, and credible vulnerability or lethality test and evaluation of "covered" systems as they progress through the System Development and Demonstration (SDD) phase prior to FRP or a major system modification that affects survivability. Survivability consists of susceptibility, vulnerability, and recoverability information derived from the firing of actual weapons (or surrogates if actual threat weapons are not available) at components, sub-systems, sub-assemblies, and/or full up, system-level targets. Modeling, simulation, and analysis must be an integral part of the LFT&E process. The Air Force must initiate LFT&E programs sufficiently early to allow test results to impact system design prior to FRP or major modification decisions. **Note*:*** See paragraph **5.10** for more information; **Attachment 1** for key definitions; and Title 10 §2366. The Air Force accomplishes LFT&E to:

2.4.1. Provide information to decision makers on potential operator casualties, system vulnerabilities, lethality, and system recoverability while taking into equal consideration the susceptibility to attack and combat performance of the system.

2.4.2. Ensure system fielding decisions include an evaluation of vulnerability and lethality data under conditions that are as realistic as possible.

2.4.3. Assess battle damage repair capabilities and issues. **Note*:*** While assessment of battle damage repair is not a statutory requirement of LFT&E, test officials should exploit opportunities to assess such capabilities whenever prudent and affordable.

***2.5. Operational Testing.** Operational testing determines if capabilities-based requirements have been satisfied and assesses system impacts to both peacetime and combat operations. It identifies and helps resolve deficiencies as early as possible, identifies enhancements, and evaluates changes in system configurations that alter system performance. Operational testing includes a determination of the operational impacts of fielding and/or employing a system across the full spectrum of military operations and may be conducted throughout the system life cycle. Operational testing may also look at doctrine, operational concepts (as described in AFPD 10-28, *Air Force Operational Concepts)*, system performance, TTPs, logistics support elements, intelligence support elements, system interoperability and security, materiel issues, safety, training, organization, human systems integration (HSI), and personnel.

2.6. Types of Operational Testing. The types of operational testing listed below afford operational testers a range of options for completing their mission. "Evaluations" collect, analyze, and report data against stated criteria with a high degree of analytical rigor and are used to support FRP or fielding decisions. "Assessments" usually collect and analyze data with less analytical rigor, need not report

against stated criteria, and cannot be the sole source of T&E data for FRP or fielding decisions. **All programs that result in a FRP or fielding decision require an appropriate level of operational testing supported by sufficient independent evaluation to support the decision**. The operational test organization, in conjunction with the user and OSD oversight organizations (if applicable), will determine the appropriate level of operational testing required, Operational testing of COTS, NDI, and GFE cannot be omitted simply because these items came from pre-established sources. Operational testing must be based on approved requirements documents specifically for the capabilities being fielded. Follow the methodology in paragraph **4.6** for determining the lead operational test organization for each acquisition program. See the definition of Operational Test and Evaluation (OT&E) in **Attachment 1** for further information.

2.6.1. Initial Operational Test and Evaluation (IOT&E). IOT&E is only conducted by the Air Force Operational Test and Evaluation Center (AFOTEC). AFOTEC determines the operational effectiveness and suitability of the items under test using production or production-representative articles with stabilized performance and operationally representative personnel. Additionally, AFOTEC will resolve the mission capability of the system. Tests are conducted under operational conditions, including combat mission scenarios that are as operationally realistic as possible. IOT&E determines if operational requirements and critical operational issues (COI) have been satisfied and assesses system impacts to peacetime and combat operations. A dedicated phase of IOT&E is required for new ACAT I and II programs according to Title 10 §2399. Dedicated IOT&E is also required for all OSD OT&E Oversight programs according to DODI 5000.2. The determination of appropriate types of operational testing for subsequent modifications and upgrades as well as applicability to other types of programs will be addressed according to paragraph **4.6**.

2.6.2. Qualification Operational Test and Evaluation (QOT&E). QOT&E is a tailored type of IOT&E conducted only by AFOTEC. It is used to evaluate military-unique portions and applications of COTS, NDI, and GFE for military use in an operational environment when little or no government-funded R&D takes place. PMs cannot disregard T&E of COTS, NDI, and GFE simply because these items came from pre-established sources. QOT&E supports the same kinds of decisions as IOT&E. See paragraph **5.15** for more information on COTS, NDI, and GFE.

2.6.3. Follow-on Operational Test and Evaluation (FOT&E). By definition, FOT&E is the continuation of operational test and evaluation (OT&E) after IOT&E or QOT&E and is conducted only by AFOTEC. It answers specific questions about unresolved COIs and test issues; verifies the resolution of deficiencies or shortfalls determined to have substantial or severe impact(s) on mission operations; or completes T&E of those areas not finished during OT&E. AFOTEC OT&E reports will document known requirements for FOT&E. More than one FOT&E may be required.

2.6.4. Multi-Service Operational Test and Evaluation (MOT&E). MOT&E can be IOT&E, QOT&E, or FOT&E when two or more military Services are involved. It can also be a Multi-Service FDE if a MAJCOM is the lead test organization. See the *Memorandum of Agreement [MOA] on Multi-Service Operational Test and Evaluation (MOT&E) and Operational Suitability and Definitions,* and paragraphs **4.7, 4.8,** and **7.9**. If MAJCOMs are involved with multi-Service testing without AFOTEC, they should use this MOA as a guide.

***2.6.5. Force Development Evaluation (FDE).** FDE is a type of dedicated operational test and evaluation performed by MAJCOM operational test organizations in support of MAJCOM-managed system acquisition-related decisions prior to initial fielding or for subsequent system sustainment or upgrade activities. An FDE may be used for multiple purposes to:

2.6.5.1. Evaluate and verify the resolution of previously identified deficiencies or shortfalls, including those not rated in AFOTEC's OT&E final report as having a substantial or severe impact on mission operations.

***2.6.5.2.** Evaluate routine software modifications (e.g., operational flight programs (OFP)), subsequent increments, upgrades, and other improvements or changes made to sustain or enhance the system.

2.6.5.3. Evaluate and verify correction of new performance shortfalls discovered after fielding of the system.

2.6.5.4. Evaluate operational systems against foreign equipment.

2.6.5.5. Evaluate operational systems against new or modified threats.

2.6.5.6. Evaluate military-unique portions and applications of COTS, NDI, and GFE for military use.

***2.6.5.7.** Support MAJCOM-managed acquisition program decisions and milestones. **Note**: Use of OUE or FDE to support MAJCOM-managed acquisition decisions is at the discretion of the appropriate MAJCOM staff or test organization.

2.6.6. Tactics Development and Evaluation (TD&E). TD&E is a tailored type of FDE conducted by MAJCOMs to refine doctrine, system capabilities, and TTPs throughout a system's life cycle according to AFI 11-260, *Tactics Development Program*. TD&Es normally identify non-materiel solutions to problems or evaluate better ways to use new or existing systems.

2.6.7. Weapons System Evaluation Program (WSEP). WSEP is a tailored type of FDE conducted by MAJCOMs to provide an end-to-end evaluation of fielded weapon systems and their support systems using realistic combat scenarios. WSEP also conducts investigative firings to revalidate capabilities or better understand munitions malfunctions.

***2.6.8. Operational Utility Evaluation (OUE).** AFOTEC or MAJCOMs may conduct OUEs whenever a dedicated operational test and evaluation event is required, but the full scope and rigor of a formal IOT&E, QOT&E, FOT&E, or FDE is not appropriate or required. OUEs may be used to support operational decisions (e.g., fielding a system with less than full capability) or acquisition-related decisions (e.g., low-rate production) when appropriate throughout the system lifecycle. Operational test organizations may establish their supplemental internal guidance on when and how to use OUEs. OUEs will not be used when IOT&E, QOT&E, FOT&E or FDE are more appropriate per existing guidance and definitions.

2.6.9. Operational Assessment (OA). OAs are conducted by AFOTEC or MAJCOMs in preparation for dedicated operational testing and typically support MS C or low-rate initial production (LRIP) decisions. They are designed to be progress reports and not intended to determine the overall mission capability of a system. They provide early operational data and feedback from actual testing to developers, operators, and decision makers. An OA can also be used to support the assessment of new technologies. OAs will **not** be used as substitutes for IOT&E, QOT&E, FOT&E, FDE, or OUE. OAs are integrated with DT&E to:

2.6.9.1. Assess and report on a system's maturity and potential to meet operational requirements during dedicated operational testing, and possibly augment or reduce the scope of dedicated operational testing.

***2.6.9.2.** Support long-lead, LRIP, or increments of evolutionary acquisition programs.

2.6.9.3. Identify deficiencies or design problems that can impact system capability to meet operational requirements, the mission, and/or employment concepts.

2.6.9.4. Uncover potential system changes needed to update operational requirements, COIs or the acquisition strategy.

2.6.9.5. Support the demonstration of prototypes, new technologies, or new applications of existing technologies as described in paragraph **2.7**, and demonstrate how well these systems meet mission needs or satisfy operational capability requirements.

2.6.9.6. Support proof of concept initiatives.

2.6.10. Early Operational Assessment (EOA). EOAs are similar to OAs, except they are performed prior to MS B to provide very early assessments of system capabilities and programmatic risks.

2.6.11. Summary of Operational Testing. The key distinctions between types of operational testing and the decisions they support are shown in **Table 2.1**. The results of TD&Es support the decision to implement (e.g., field or publish) new or revised TTPs**. Note*:* Table 2.1** is intended as a summary and may not cover all possible T&E situations; refer to the descriptions in paragraph **2.6** or consult with HQ USAF/TEP for final guidance of any issues.

***2.6.12. Sufficiency of Operational Test Review (SOTR).** For some programs of limited scope and complexity, system development testing or integrated developmental and operational test events may provide adequate operational test data to support MAJCOM fielding decisions. In these situations, the lowest appropriate level of required MAJCOM operational testing may consist of a review of existing data rather than a separate, dedicated operational test event. Each MAJCOM will determine the appropriate MAJCOM staff or test organization where decisions are made for using a SOTR. The SOTR may only be used to inform MAJCOM or user system fielding decisions. It may not be used as the sole source of operational test information for any type of acquisition milestone or production decisions. The SOTR may not be used for acquisition milestone decisions associated with OSD OT&E Oversight programs unless approved by DOT&E. See paragraph **7.5.5**.

Table 2.1. Summary of Operational Testing Options.

Type of Operational Testing	ASSESSMENTS	EVALUATIONS		
	EOA, OA	IOT&E, QOT&E, FOT&E	OUE	FDE and TD&E
Who Conducts	All	AFOTEC	All	MAJCOM
Type Program	All programs	ACAT I, IA, II, and OSD T&E Oversight	All programs	All programs
Decision Supported	EOA: MS B OA: MS C, LRIP	FRP, Fielding	FRP, Fielding when IOT&E, QOT&E, FOT&E, or FDE not warranted	FRP, Fielding when IOT&E, QOT&E, or FOT&E not warranted

2.7. Test Support for Technology Transition. DODI 5000.2 creates multiple paths for "technology projects" and experimentation projects to enter the acquisition system in support of warfighter needs and employment concepts. These activities fall outside the traditional acquisition process and beyond the scope of this AFI. Nonetheless, Air Force testers may be required to support these activities by providing T&E expertise, assessing the military utility of new technologies, and ensuring that T&E data can be used to support subsequent acquisition activities. Examples of these types of projects include:

2.7.1. Advanced Technology Demonstrations (ATD). These are fully funded advanced development efforts used to meet the needs of employment concepts and capability requirements through "proof of principle" demonstrations in operationally realistic environments. ATDs demonstrate the maturity and potential of advanced technologies for enhancing military operational capabilities.

2.7.2. Advanced Concept Technology Demonstrations (ACTD) and Joint Concept Technology Demonstrations (JCTD). ACTD/JCTDs are Office of the Secretary of Defense (OSD)-sponsored projects designed to exploit maturing technologies that have the potential to fulfill near-term, validated, joint military needs and rapidly transfer those technologies to operators. ACTD/JCTDs are not a formal part of the acquisition process. They are highly tailored "demonstrations," under the direction of an ACTD/JCTD operator-sponsor, that typically use OAs or military utility assessments (MUA). For more information, contact SAF/XCOI or the Deputy Under Secretary of Defense for Advanced Systems and Concepts, DUSD(AS&C), at http://www.acq.osd.mil/actd/guidelns.htm.

2.8. Foreign Comparative Testing (FCT). FCT is an OSD-sponsored T&E program prescribed by Title 10 §2350a(g) and centrally managed by the Office of the Deputy Under Secretary of Defense (Advanced Systems and Concepts) Comparative Testing Office. FCT is conducted on foreign nations' systems, equipment, and technologies to determine their potential to satisfy validated United States operational requirements. Testers participate in FCT projects as directed by the program management directive (PMD). See the Comparative Testing Office Procedures Handbook at http://www.acq.osd.mil/cto/handbook/2005CTOHandbookFinal.pdf.

2.9. Joint Test and Evaluation (JT&E). The JT&E Program charters joint test projects to evaluate non-materiel capabilities and potential options for increasing joint military effectiveness. The JT&E Program focuses on evaluating current equipment, organizations, threats, doctrine, TTPs, test methodologies, and system interoperability in realistic environments. The JT&E Program and organizational responsibilities are described in AFI 99-106, *Joint Test and Evaluation Program*, and DODI 5010.41, *Joint Test and Evaluation (JT&E) Program*. JT&E projects are **not** acquisition programs and are totally distinct and separate from MOT&E and multi-Service testing. See definitions in **Attachment 1**.

Chapter 3

RESPONSIBILITIES

3.1. Overview of Responsibilities. All Air Force testers and the acquisition community will follow the T&E principles articulated in **Chapter 1** of this AFI using the types of tests described in **Chapter 2**. Testers must collaborate with each other, acquisition officials, and requirements sponsors using the ITT as the T&E focal point for each program. The acquisition community must use this AFI to ensure the agile acquisition and seamless verification concepts function as intended.

3.2. Director, Operational Test and Evaluation (DOT&E). DOT&E:

3.2.1. Prescribes OT&E and LFT&E policies for the DOD according to Title 10 §139, §2366, §2399, and §2400; and DODD 5141.2, *Director of Operational Test and Evaluation (DOT&E)*.

3.2.2. Exercises oversight responsibility for ACAT I or other programs in which the Secretary of Defense (SECDEF) has special interest. Monitors and reviews OT&E and LFT&E activities in the DOD. Participates in ITTs and test integrated product teams (TIPT) to foster program success.

3.2.3. Publishes, in conjunction with USD(AT&L)/DS, a combined list of OSD T&E Oversight programs for DT&E, LFT&E, and OT&E. Contact HQ USAF/TEP for the most current list.

3.2.4. Approves, in writing, the adequacy of operational test plans for those programs on OSD OT&E Oversight prior to the commencement of operational testing. Approves the operational test portions of integrated test plans. Approves the quantity of test articles required for operational testing of major defense acquisition programs (MDAP).

3.2.5. Approves test and evaluation master plans (TEMP) and T&E strategies for OSD T&E Oversight programs in conjunction with USD(AT&L)/DS and Assistant Secretary of Defense for Networks and Information Integration (ASD/NII).

3.2.6. Approves LFT&E strategies and waivers prior to commencement of LFT&E activities.

3.2.7. Submits a report to SECDEF and Congress before systems on OSD OT&E Oversight may proceed beyond LRIP.

3.3. Headquarters, U.S. Air Force, Director of Test and Evaluation (HQ USAF/TE). HQ USAF/TE will:

3.3.1. Function as the chief T&E advisor to Air Force senior leadership according to Headquarters Air Force Mission Directive (HAF MD) 1-52, *Director of Test and Evaluation*. Is responsible to the Chief of Staff of the Air Force (CSAF) for establishing Air Force T&E policy, determining the adequacy of T&E resources required to support weapons system development, and resolving T&E issues.

3.3.2. Act as the final T&E review authority and signatory for TEMPs prior to Service Acquisition Executive (SAE) approval and signature. See paragraphs **3.4.5, 3.5.5,** and **5.14.2**.

3.3.3. Collaborate with requirements sponsors and system developers to improve the development, testing, and fielding of Air Force systems or subsystems. Participate in high performance teams (HPT), ITTs, and TIPTs as necessary to help ensure program success.

3.3.4. Respond to and mediate T&E issues between HQ USAF principals, MAJCOMs, Air Force testers, the Services, OSD, and Congress.

3.3.5. Review and/or prepare T&E information for release to OSD and ensure timely availability of T&E results to decision makers.

3.3.6. Oversee the Air Force T&E infrastructure by ensuring adequate resources to support system acquisition activities. Administer various T&E resource processes and chair or serve on various committees, boards, and groups listed in HAF MD 1-52.

3.3.7. Acts as the single point of entry for the Foreign Materiel Program for the Air Force according to AFI 99-114, *Foreign Materiel Program (S)*.

3.3.8. Function as the certifying authority for T&E personnel for T&E Level 3 in the Acquisition Professional Development Program (APDP) when not delegated to the MAJCOMs.

3.3.9. Provide advice on ITT charter development and membership requirements. Review ITT charters for programs where HQ USAF/TE participation is necessary.

3.3.10. Manage the Air Force JT&E Program according to DODI 5010.41 and AFI 99-106.

3.3.11. Perform other duties listed in HAF MD 1-52.

3.4. Assistant Secretary of the Air Force for Acquisition (SAF/AQ). SAF/AQ or designated representatives serve as the Air Force SAE for non-space systems. SAF/AQ will:

3.4.1. Direct PMs to assist ITTs and TIPTs in developing T&E strategies as early as possible (i.e., before MS A).

3.4.2. Ensure systems and programs are certified ready for dedicated operational testing according to AFMAN 63-119.

3.4.3. Ensure T&E responsibilities are documented in ADMs, PMDs, TEMPs, life cycle management plans (LCMP), expectation management agreements (EMA), and other program documentation. Ensure the initial ADM gives direction for establishing the ITT. **Note**: Life cycle management plans (LCMP) are replacing single acquisition management plans (SAMP). In this AFI, all references to the TEMP include the SAMP or LCMP, whichever is applicable according to AFI 63-107, *Integrated Product Support Planning and Assessment*. See **paragraph 5.13** for more details about SAMPs and LCMPs.

3.4.4. Regarding LFT&E, SAF/AQ or designated representatives will:

3.4.4.1. Recommend candidate systems to DOT&E for compliance with LFT&E legislation after coordinating the proposed nominations with HQ USAF/TE.

3.4.4.2. Approve agreed-upon LFT&E strategies and Air Force resources required to accomplish LFT&E plans and forward to DOT&E. Forward LFT&E waivers (and legislative relief requests, if appropriate) to DOT&E, if required.

3.4.5. Approve TEMPs for all non-space ACAT I, IA, II, and other programs on OSD T&E Oversight. Forward approved TEMPs to DOT&E and USD(AT&L)/DS.

3.5. Under Secretary of the Air Force (SAF/US). SAF/US will:

3.5.1. Function as DOD's Space Milestone Decision Authority (MDA) and Air Force SAE for assigned space system acquisition programs according to *NSS 03-01* and applicable OSD and SECAF delegations. **Note**: The acquisition process in *NSS 03-01* is different than the acquisition process in DODI 5000.2 and AFI 63-101. See paragraph **1.2.3**.

3.5.2. Direct PMs to assist ITTs and TIPTs as early as possible (i.e., before KDP A).

3.5.3. Ensure systems and programs are certified ready for dedicated operational testing according to AFMAN 63-119.

3.5.4. Ensure space system T&E responsibilities are documented in the ADM, PMD, TEMP, integrated program summary (IPS), and other program documentation. Ensure each program has established an ITT prior to KDP-A.

3.5.5. Approve TEMPs for all space MDAPs, all major space system acquisitions (non-major systems as required) and other space programs on OSD T&E Oversight. Forward approved TEMPs to DOT&E and USD(AT&L)/DS. **Note**: These programs are defined in *NSS 03-01*, paragraph **3.1**.

3.6. Headquarters, Air Force Materiel Command (AFMC). HQ AFMC will:

3.6.1. Develop AFMC DT&E policies, procedures, guidance, and MOAs for non-space programs in assigned mission areas to supplement this AFI. Forward draft copies for HQ USAF/TEP and SAF/AQXA prior to publication.

3.6.2. Ensure nuclear weapon system polices and issues are managed according to AFI 63-103 and AFI 63-125. Assist with development and approval of Nuclear Weapon Subsystem Test Plans.

3.6.3. Establish and provide for DT&E training, organization, and T&E infrastructure resources.

3.6.4. Ensure RDT&E representation at pre-Concept Refinement phase activities to assist in early requirements development, early T&E strategy development, and early acquisition planning according to AFI 10-601, AFI 63-101, and this AFI. Participate in HPTs. Identify organizations responsible for these activities.

3.6.5. Assist the ITT and PM in identifying government DT&E organizations as RTO candidates as soon as possible after the Concept Decision according to paragraphs **4.4** and **4.5**.

3.6.6. Establish policy for and assign T&E focal points to provide support at the air logistics centers (ALC) and product centers.

3.6.7. Conduct long-range planning to ensure T&E infrastructure and processes are in place to support required testing.

3.6.8. Ensure test centers participate in T&E resource investment planning processes.

3.6.9. Ensure ALC and product center PMs oversee the conduct of DT&E and support operational testing of fielded systems throughout the life cycle of the system.

3.6.10. Oversee and inspect AFMC compliance with this instruction.

3.7. Headquarters, Air Force Space Command (AFSPC). HQ AFSPC will:

3.7.1. Develop HQ AFSPC T&E policies, procedures, guidance, and MOAs for space and intercontinental ballistic missile (ICBM) programs to supplement this AFI. Forward draft copies for HQ USAF/TEP and SAF/AQXA prior to publication.

3.7.2. Serve as the focal point for T&E of space launch and ICBM acquisition programs, and technology projects in conjunction with SAF/US.

***3.7.3.** Ensure RDT&E representation to pre-Concept Decision activities to assist in early requirements and CONOPS development, early T&E strategy development, and early acquisition planning. Participate in HPTs according to AFI 10-601.

3.7.4. Assist the ITT and PM in identifying government DT&E organizations as RTO candidates as soon as possible after the Concept Decision according to paragraphs **4.4** and **4.5**. Participate in ITTs and TIPTs as necessary to help ensure program success.

3.7.5. Advocate for and procure space- and ICBM-related T&E infrastructure, resources, and requirements.

3.7.6. Review and coordinate on space- and space launch-related test plans, test reports, and test-related correspondence for programs on OSD T&E Oversight.

3.7.7. Maintain DT&E and operational testing expertise.

3.7.8. Implement the policies in *NSS Acquisition Policy 03-01* and DODI S-3100.15, *Space Control*, for space control systems.

3.7.9. Ensure T&E training is provided for AFSPC personnel involved in T&E.

3.8. Program Managers (PM). PMs will:

3.8.1. Form and co-chair (with AFOTEC or the lead operational test organization) ITTs as early as possible (preferably before Concept Refinement) according to paragraphs **1.4** and **4.4**. Help determine the appropriate operational test organization according to paragraph **4.6**. **Note*:*** See definition of PM in **Attachment 1**.

3.8.2. Assist in the development of a T&E strategy and test plans that are integrated in support of the requirements and acquisition strategies and the EMA.

3.8.3. Lead the development of the ITT charter and coordinate with stakeholder organizations.

3.8.4. Secure specialized T&E capabilities and instrumentation to support T&E throughout the system life cycle.

3.8.5. Regarding LFT&E, the PM will:

3.8.5.1. Ensure systems are screened and correctly designated as "covered systems" or "covered product improvement programs" if required by Title 10 §2366. Coordinate the proposed nominations with HQ USAF/TEP and the PEO before obtaining SAF/AQ approval. Forward approved nominations to DOT&E.

3.8.5.2. Plan, program, and budget for LFT&E resources if the system is "covered," to include test articles, facilities, manpower, instrumented threats, and realistic targets.

3.8.5.3. Identify critical LFT&E issues. Prepare and coordinate required LFT&E documentation to include the TEMP and LFT&E strategy, plans, and reports. Review briefings pertaining to the system under test before forwarding to HQ USAF.

3.8.5.4. Prepare LFT&E waiver requests and legislative relief requests, if required, to include an alternative plan for evaluating system vulnerability or lethality.

3.8.6. Plan for and document the M&S approach. Keep the Modeling and Simulation Support Plan current according to AFI 16-1002, *Modeling and Simulation (M&S) Support to Acquisition.*

3.8.7. Implement an effective system certification process for operational testing as early as practical. Certify systems ready for dedicated operational testing according to paragraph **6.6** and AFMAN 63-119.

3.8.8. Determine the scope of DT&E needed throughout the project or program life cycle according to **Chapters 4** and **5**. Ensure an RTO is designated as early as possible (not later than MS A, if applicable) according to paragraphs **4.4** and **4.5**.

3.8.9. Assist operational test organizations in determining the scope of and schedule for operational testing and reporting.

***3.8.10.** Ensure all DT&E (both contractor and government) is conducted according to approved test plans and other program documentation. Ensure the TEMP, Systems Engineering Plan (SEP), and LCMP (or Information Support Plan (ISP)) are synchronized and mutually supporting.

3.8.11. Ensure operational test and evaluation is conducted for all acquisition or sustainment programs requiring an FRP or fielding decision according to paragraph **2.6**.

3.8.12. Plan for test and evaluation of system logistics support elements throughout the system life cycle according to AFI 63-107.

3.8.13. Ensure formation of TIPTs, such as the Material Improvement Program Review Board and the Joint Reliability and Maintainability Evaluation Team (JRMET), to track and resolve deficiencies. See paragraphs **6.9** and **6.10**.

3.8.14. Ensure the Air Force SEEK EAGLE Office certifies all internal and external stores according to AFI 63-104, *The SEEK EAGLE Program*.

3.8.15. Fund and support the T&E strategy and TEMP according to AFI 65-601, *Budget Guidance and Procedures*, Vol 1, Chapter 14.

3.8.16. Report, validate, track, evaluate, and take appropriate actions on deficiency reports (DR) according to Chapter 2 of Technical Order (TO) 00-35D-54, *USAF Deficiency Reporting and Investigating System,* and AFI 63-501, *Air Force Acquisition Quality Program*. Continue supporting DR evaluation and resolution during operational testing and system sustainment.

3.8.17. Ensure timely government access to contractor T&E data, deficiency reporting processes, and all T&E results through an open T&E database available to all program stakeholders.

3.9. Air Force Operational Test and Evaluation Center (AFOTEC). AFOTEC will:

3.9.1. Develop AFOTEC OT&E policies, procedures, guidance, and MOAs to supplement this AFI. Forward draft copies to HQ USAF/TEP and SAF/AQXA prior to publication. Follow the OT&E construct methodology and taxonomy outlined in the *AFOTEC OT&E Guide*.

3.9.2. Carry out the responsibilities in Air Force Mission Directive (AFMD) 14, *Air Force Operational Test and Evaluation Center (AFOTEC).*

3.9.3. Function as the Air Force operational test agency (OTA) for programs as determined in paragraph **4.6**. Monitor Air Force acquisition programs for operational test applicability. Function as the lead OTA for multi-Service programs when designated. **Note**: The following paragraphs (i.e., **3.9.4** to **3.9.16**) apply only to operational test programs assigned to AFOTEC as derived from paragraph **4.6**.

3.9.4. Help form and co-chair (with the PM) ITTs for programs as determined in paragraph **4.6**. The ITT must be formed as early as possible, preferably before Concept Refinement, according to paragraph **4.4**.

***3.9.5.** Participate in HPTs to ensure testability of capabilities-based requirements (i.e., ICD, CDD, CPD). Assist in development of CONOPS as described in AFPD 10-28, technology development strategies (TDS), COAs, and analyses of alternatives (AoA).

3.9.6. Help prepare T&E strategies and test plans that are integrated. Prepare the OT&E portions of the TEMP.

3.9.7. Collaborate with other operational test organizations and HQ USAF/TEP to ensure operational testing is conducted by the appropriate test organization(s) according to paragraph **4.6**.

3.9.8. Provide independent operational testing expertise and level of support to FDE as negotiated and documented in program documentation.

3.9.8.1. DELETED

3.9.8.2. DELETED

3.9.9. Establish and maintain formal liaison with HQ USAF/TE, MAJCOMs, ALCs, and product centers to ensure coordination of new or revised operational test procedures and techniques.

3.9.10. Use capabilities-based requirements as the **primary** source of evaluation criteria. Report results directly to the CSAF and MDA.

3.9.11. Program for AFOTEC-conducted T&E activities and list costs, schedules, and resources in test resource plans (TRP). Coordinate TRPs with supporting organizations in sufficient time for funds and personnel to be budgeted during the program objective memorandum (POM) cycle.

3.9.12. Determine the quantity of test articles required for OT&E in consultation with the MAJCOM and the PM.

3.9.13. Participate in the certification of readiness for dedicated operational testing according to AFMAN 63-119.

3.9.14. Identify, validate, submit, track, and prioritize system deficiencies and enhancements according to TO 00-35D-54.

3.9.15. Provide T&E training for personnel involved in operational test activities.

3.9.16. Plan and conduct operational assessments in support of Air Force-approved technology projects.

3.10. Operational MAJCOM, DRU, and FOA Headquarters. MAJCOMs, DRUs, and FOAs will:

***3.10.1.** Develop MAJCOM T&E policies, procedures, guidance, and MOAs to supplement this AFI. Forward draft copies for HQ USAF/TEP and SAF/AQXA review prior to publication. The lead command will advocate for and carry out the responsibilities in paragraphs **3.10.2**. through **3.10.17** for weapon systems during their life cycle according to AFPD 10-9, *Lead Command Designation and Responsibilities for Weapon Systems.* **Note**: In this AFI, the term "MAJCOM" will include FOAs, DRUs (except AFOTEC), and other subordinate test organizations.

***3.10.2.** Collaborate with requirements sponsors and system developers to improve the development, testing, and fielding of Air Force systems and subsystems. Develop clear and testable capability-based requirements and CONOPS. Participate in HPTs, ITTs, and TIPTs as necessary to help ensure program success.

3.10.3. Participate early in ITTs to develop test plans that are integrated in support of acquisition and sustainment programs.

3.10.4. DELETED

3.10.5. Review and coordinate on T&E-related documentation impacting MAJCOM systems.

3.10.6. Oversee the T&E policies and activities of assigned T&E organizations to ensure compliance with HQ USAF, OSD, and MAJCOM T&E policies.

3.10.7. Advocate for test resources and test requirements.

3.10.8. Ensure T&E training is provided for personnel involved in T&E activities.

3.10.9. Provide support for the OSD-sponsored JT&E Program and joint test projects according to AFI 99-106.

3.10.10. Ensure OAs, OUEs, and FDEs are planned, conducted, and results reported for assigned systems and programs when AFOTEC is not involved according to paragraphs **4.4.4** and **4.6**.

3.10.11. Support AFOTEC-conducted OT&E as agreed by the ITT, TIPTs, and documented in TRPs and TEMPs.

3.10.12. Continue operational testing of acquisition programs according to paragraphs **2.6.5** and **4.6**. Provide information to DOT&E according to paragraphs **6.7, 6.8,** and **Attachment 2**.

3.10.13. Assist in certifying systems ready for dedicated operational testing according to AFMAN 63-119.

3.10.14. Identify and report DRs according to TO 00-35D-54, Chapter 2. Monitor open DRs from earlier testing.

3.10.15. Conduct TD&Es and WSEPs to enhance operational capabilities.

3.10.16. DELETED

3.10.17 MAJCOMs may request AFOTEC assistance and/or involvement as desired.

3.11. Headquarters, U.S. Air Force, Deputy Chief of Staff, Air, Space, & Information Operations, Plans, & Requirements (HQ USAF/A3/5). HQ USAF/A3/5 will support ITTs and participate in T&E strategy development.

3.12. Secretary of the Air Force, Office of Warfighting Integration and Chief Information Officer (SAF/XC). SAF/XC will:

3.12.1. Establish information technology (IT) standards and profiles to guide IT system and National Security System (NSS) development. Establish performance and interoperability criteria to ensure alignment with and integration into the Air Force Enterprise.

3.12.2. Develop and implement security and information assurance (IA) policies that include adequate and recurring T&E of IT and NSS systems according to DODD 8500.1, *Information Assurance*, and DODI 8500.2, *Information Assurance (IA) Implementation*.

3.12.3. Partner with the requirements, acquisition, and T&E communities to ensure planned capabilities are adequately tested to satisfy net-centric, security, and IA requirements.

3.12.4. Review T&E-related documentation to ensure interoperability certification testing, security testing, and IA testing fully support system acquisition, fielding, and sustainment according to paragraph **5.7.**

3.12.5. Implement measures to ensure net-ready key performance parameters (NR-KPP), including the associated key interface profiles (KIP), are clearly defined in the system architecture, and are interoperable, resourced, tested, and evaluated according to the Air Force Enterprise Architecture and OSD, JCS, JITC, and HQ USAF 33-series AFIs.

3.12.6. Facilitate security, net-readiness, and interoperability certifications as early as practical. Assist in the certification of readiness for operational testing according to AFMAN 63-119.

3.12.7. Provide direction for using the Security, Interoperability, Supportability, Sustainability, and Usability (SISSU) checklists according to AFI 33-202, Vol I, *Network and Computer Security*, and the *IT Lean Guidebook.*

3.12.8. Participate early in ITTs and TIPTs for acquisition and sustainment programs with IT and NSS capabilities as soon as they are formed. Direct SAF/XC FOAs to participate as required.

3.12.9. Provide networthiness recommendations for IT systems.

3.12.10. Provide policy, guidance, and oversight of all Air Force M&S in support of operations, T&E, wargaming, experimentation, and analysis.

3.12.11. Ensure only certified organizations plan and conduct penetration testing.

3.13. Responsible Test Organization (RTO). The RTO will:

3.13.1. Participate in ITTs as early as possible and assist TIPTs as required.

3.13.2. Assist the requirements and acquisition communities in developing studies, analyses, and program documentation according to AFI 10-601 and AFI 63-101.

3.13.3. Plan, manage, and conduct government DT&E, LFT&E, and integrated testing according to the T&E strategy, integrated test concept, TEMP, DT&E, and LFT&E plans. Maintain insight into contractor activities and oversee PTO T&E activities.

3.13.4. Help PMs make technically informed, objective judgments about contractor DT&E results.

3.13.5. Provide government DT&E results and final reports to the PM, PEO and other stakeholders in support of decision reviews and certification of readiness for dedicated operational testing. Provide results and reports to common T&E databases.

3.13.6. Report, validate, and initially prioritize DRs according to TO 00-35D-54, Chapter 2.

3.14. Integrated Test Team (ITT). The ITT will:

3.14.1. Develop and manage the T&E strategy and test plans that are integrated to effectively support the requirements, acquisition, and sustainment strategies. **Note*:*** A single ITT may cover multiple related programs.

3.14.2. Develop and implement an ITT charter according to paragraph **4.4**. Coordinate updates to the charter as program changes warrant.

***3.14.3.** Direct formation of subgroups (i.e., IPTs) as needed to address T&E data analysis, problem solving, test planning, and coordinate test, execution, and reporting.

***3.14.4.** Assist in establishing test teams (e.g., combined test forces [CTF]) to conduct integrated testing.

3.14.5. Assist the acquisition community in developing studies, analyses, documentation, strategies, and plans according to AFI 63-101.

3.14.6. Develop the TEMP, LCMP T&E annex, and other T&E documentation according to the DOD 5000-series, this AFI, and AFI 63-107.

***3.14.7.** Assist the requirements community in developing the Requirements Strategy, analyses of materiel approaches, AoA plans, AoAs, requirements documents, CONOPS as described in AFPD 10-28, and architectures as described in AFI 10-601, CJCSI 3170.01, CJSCM 3170.01, CJCSI 6212.01, and AFI 33-401, *Implementing Air Force Architectures*.

3.14.8. Ensure security test and evaluation of information technologies is planned according to DODI 8510.01, *DOD Information Assurance Certification and Accreditation Process (DIACAP),*and SAF/XC's *IT Lean Guidebook*.

3.14.9. Ensure all T&E activities comply with arms control treaty limitations and obligations. Check with SAF/GCI and HQ USAF/A3S for guidance.

3.14.10. Plan for a common T&E database according to paragraph **5.5.**

3.14.11. Nominate an RTO to the PEO for approval according to paragraph **4.5**.

3.14.12. Ensure integrated technical and safety reviews are conducted according to paragraph **6.5**.

3.14.13. Ensure test teams report, validate, and prioritize DRs according to TO 00-35D-54, Chapter 2, AFI 63-501, and AFI 10-602, *Determining Mission Capability and Supportability Requirements*.

3.14.14. Review and provide inputs to contractual documents to ensure they address government testing needs according to paragraph **5.4**. Oversee contractor and PTO T&E activities.

3.14.15. Identify T&E resource requirements, including necessary facility upgrades and personnel.

3.15. Participating Test Organizations (PTO). PTOs will:

3.15.1. Be part of ITTs and TIPTs as soon as they are formed.

3.15.2. Assist other test organizations as described in program documentation and test plans that are integrated.

3.15.3. Ensure T&E training is provided for PTO personnel involved in T&E activities.

***3.16. United States Air Force Warfare Center (USAFWC).** The USAFWC will exercise "coordinating authority" for operational testing as defined in the *USAFWC Charter* as follows:

***3.16.1.** Initiate dialogue and close collaboration with MAJCOMs to ensure priorities for operational testing are synchronized and candidates for collaborative testing are identified.

***3.16.2.** Coordinate with and support AFOTEC-conducted operational testing for weapon systems' initial acquisition and fielding decisions.

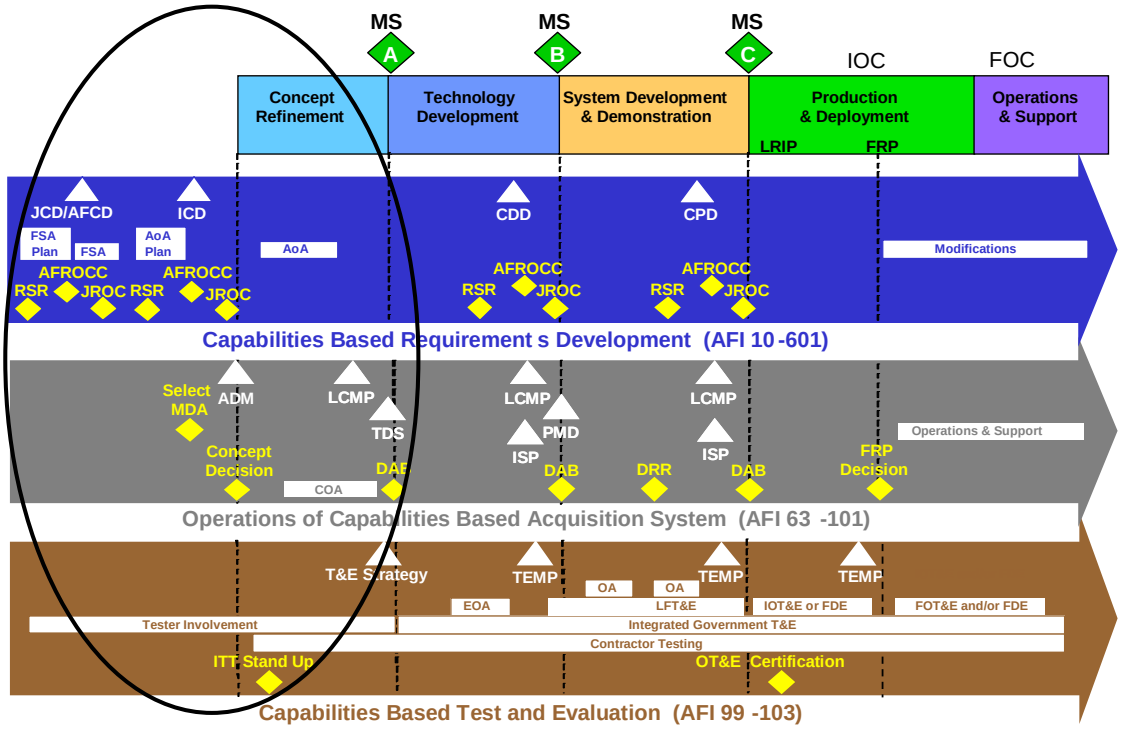
*3**.16.3.** Identify and help eliminate redundant operational test activities.

Chapter 4

T&E ACTIVITIES SUPPORTING MILESTONE A DECISIONS

4.1. Early Tester Involvement. The oval in **Figure 4.1** encompasses the most important activities prior to and during Concept Refinement that support a MS A decision. This chapter explains testers' roles in these activities. **Note**: The timing of T&E activities and documentation for space system acquisition programs is different because KDPs for these programs are phased earlier than typical DOD 5000-series programs as described in *NSS 03-01*.

Figure 4.1. Integration of Requirements, Acquisition, and T&E Events Prior to Milestone A.

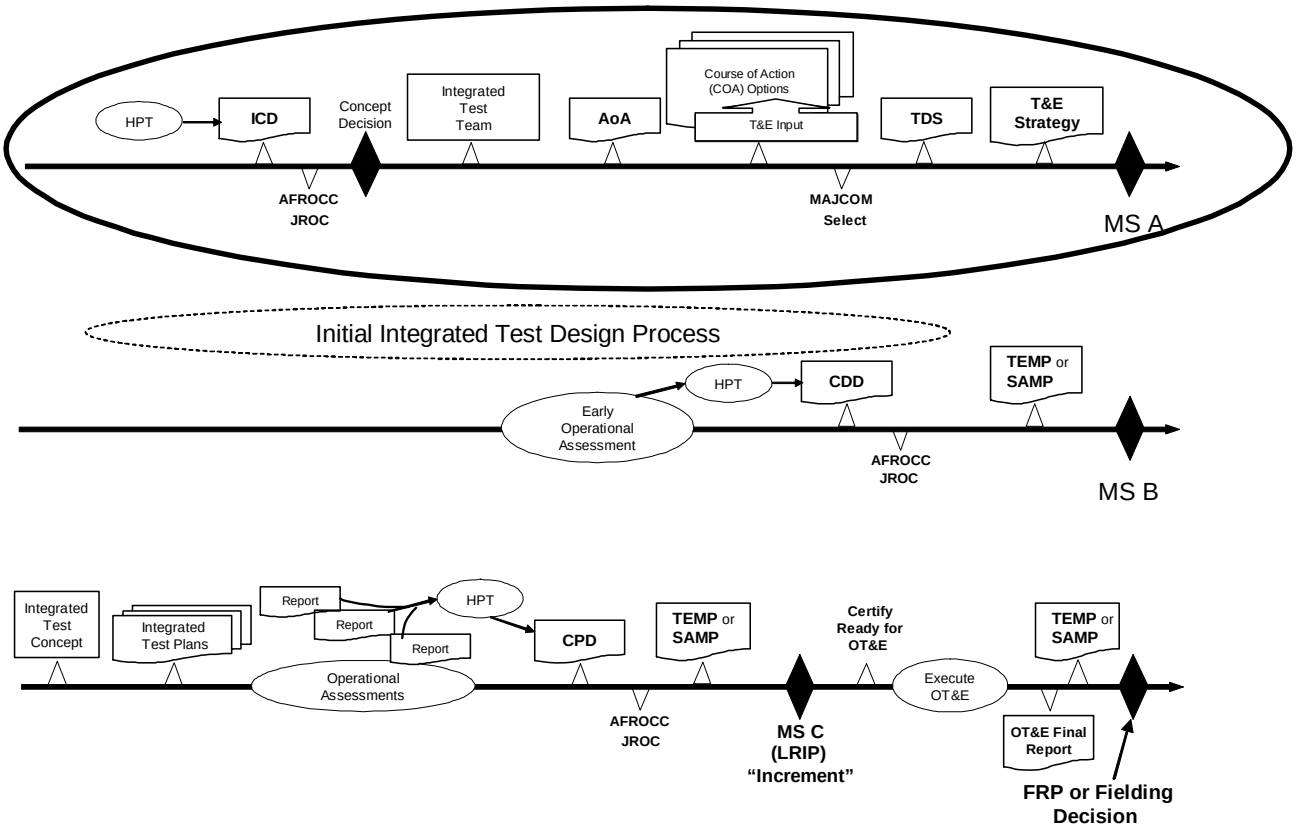


Note: SAMPs will be phased out as LCMPs are phased in.

***4.2. Early Tester Involvement in Requirements Development.** Early tester involvement starts with participation in the requirements process described in AFI 10-601, CJCSI 3170.01, CJCSM 3170.01, and CJCSI 6212.01. Testers will participate in developing the Requirements Strategy and the Analysis of Materiel Approaches. As high performance team (HPT) members, developmental and operational testers will support development of the Initial Capabilities Document (ICD) with technical and operational expertise. HPT member organizations and procedures are identified at HQ USAF/A3/5's web site: https://www.afreqs.hq.af.mil/. Air Force T&E organizations will ensure support to HPTs. Testers will review Air Force operating and enabling concepts as described in AFPD

10-28 to fully understand how new systems will be employed and supported. Testers will help ensure these documents support the development of a T&E strategy and the request for proposal (RFP). They will also ensure that operational capability requirements are testable. HQ USAF/TE, AFOTEC, and MAJCOM representatives participate in the Air Force Requirements for Operational Capabilities Council (AFROCC). The documents, studies, and decisions supporting MS/KDP A are shown in the oval in **Figure 4.2**.

Figure 4.2. Integrated Testing Concept Flowchart.



4.3. Early Tester Involvement in the Acquisition Process. The ADM officially starts the acquisition process. The PM should be assigned to help lead and fund early study and collaborative efforts. Developmental and operational testers must be involved in the collaborative work that produces the ICD, AoA Study Plan, Concept Decision, COA, EMA, acquisition strategy, T&E strategy, and the definition of entrance and exit criteria for developmental and operational testing. Early project or program documentation must address which test organizations will conduct DT&E and operational testing as determined from paragraphs **4.4** and **4.6**.

4.4. Formation of the Integrated Test Team (ITT). An ITT must be formed as early as possible in the life cycle of new programs, preferably prior to MS A, so it can help shape the requirements, acqui-

sition, and T&E strategies as depicted in **Figures 4.1** and **4.2**. The ITT works together as a cross-functional team to map out the grand strategy for testing and evaluating a system. All programs must have an ITT, but a single ITT can cover a number of closely related programs, such as the modifications and upgrades embedded in a legacy aircraft program.

4.4.1. ITT Leadership. The SPO (or SPO initial cadre) will take the lead in forming an ITT with representatives from all needed disciplines. Representatives from the SPO (or SPO initial cadre) and the operational test community will co-chair the ITT. Testers must be proactive in supporting ITT initial formation and goals even though they may not be formally tasked before an initial ADM is signed. Testers who contributed to the AoA plan or participated in the HPT should form the nucleus of the initial ITT.

4.4.2. ITT Charter. A formal, signed ITT charter will describe ITT membership, responsibilities, ITT resources, and the products for which the ITT is responsible. ITTs are generally composed of two levels: an Executive Level consisting of O-6s and GS-15s from key organizations and a Working Group Level consisting of specific organizations needed to fulfill ITT tasks. Only O-6 or GS-15 representatives from Executive Level organizations will sign the ITT charter. Follow the recommended ITT charter outline and guidance in the *Air Force T&E Guidebook* located at https://afkm.wpafb.af.mil/ASPs/CoP/OpenCoP.asp.

4.4.3. ITT Membership. The ITT leadership will tailor the membership, structure, and protocols as necessary to help ensure program success. ITT membership (at the Executive Level and Working Group Level) may vary depending on program needs. The ITT should include expertise from organizations such as the SPO (or initial SPO cadre), AFOTEC, and/or MAJCOM operational tester (as appropriate), SAF/AQ or SAF/US, HQ USAF/TE, HQ USAF/A3/5, SAF/XC, JITC, OSD, ALCs, product centers, contractor, developer, science and technology, intelligence, developmental testers, requirements sponsors, test facilities, and other stakeholders as needed during various test program phases. Include representatives from the other Services if testing in a joint environment is anticipated. Also include the implementing command headquarters and Air Education and Training Command, if required.

4.4.4. Subgroups. The ITT charter should direct the formation of subgroups (i.e., TIPTs, study groups, review boards) to write test plans and handle specific test issues as needed. These subgroups would not require full ITT participation. **Note**: A "test team" is a group of testers and other experts who are responsible for specific test issues or carry out integrated testing according to specific test plans. A CTF is one way to organize a test team for integrated testing. There may be multiple TIPTs and test teams associated with an ITT.

***4.4.5. Operational MAJCOM Roles.** MAJCOM operational testers may be required to participate in the ITT at program inception if AFOTEC is not the lead operational test organization according to paragraph **4.6**. In these cases, MAJCOM operational testers must assume the ITT co-chair position and conduct required operational testing if AFOTEC is not involved with the test program. When AFOTEC is the lead operational test organization, MAJCOM operational testers should plan for transition of these responsibilities according to paragraph **4.6**. PMDs and TEMPs must reflect this transition.

4.4.6. Charter Updates. Charters will be reviewed and updated after each major decision review to ensure testing will be integrated as much as possible within statutory and regulatory guidelines. Changes in membership should reflect the skills required for each phase of the program. **Note**: The ITT supersedes the TPWG with expanded responsibilities as described in paragraph **3.14**. As existing TPWGs take on these new responsibilities, the group's name should change to ITT.

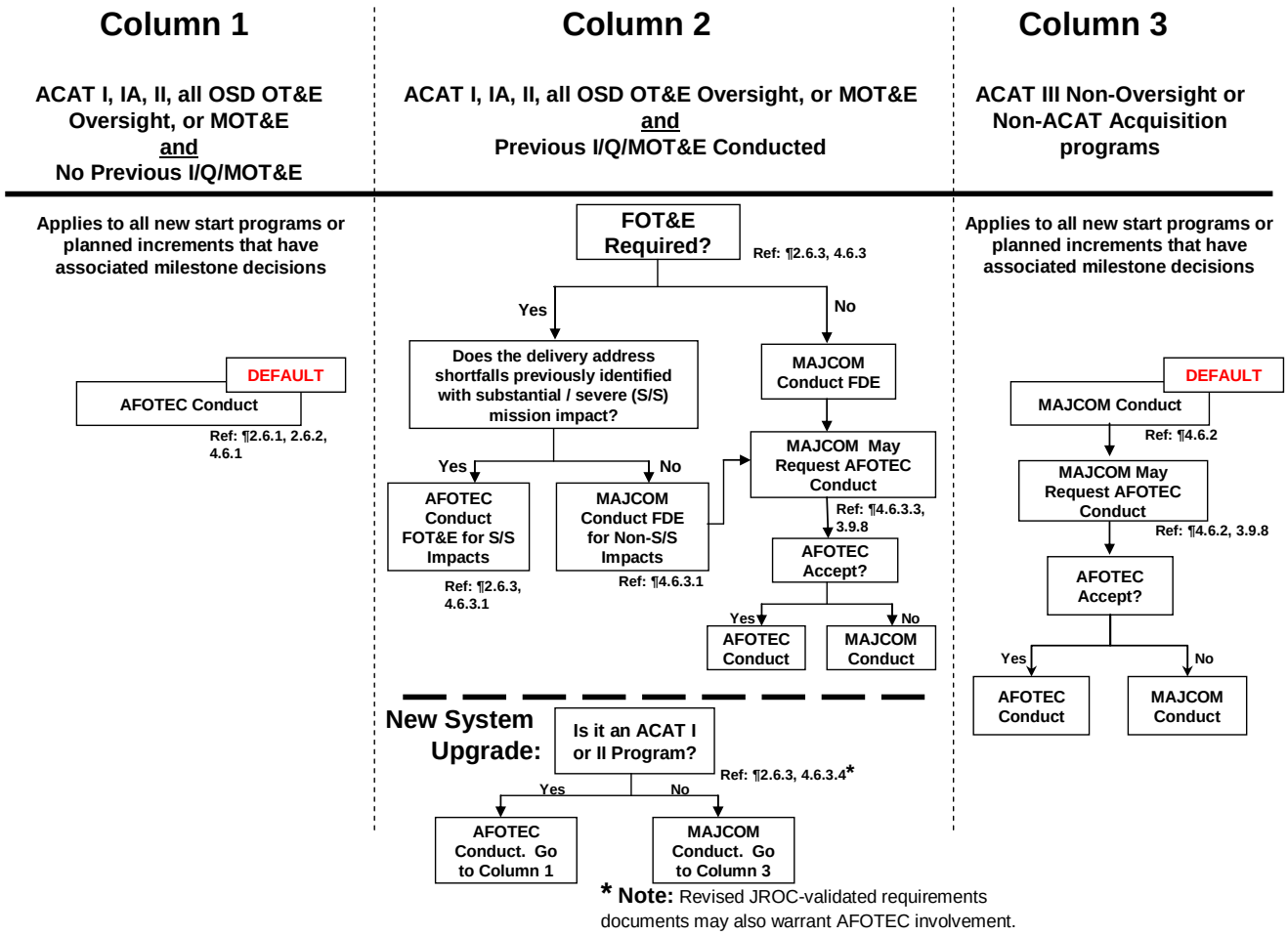
4.5. Determining the RTO. The RTO is the lead government developmental test organization responsible for overseeing and/or conducting DT&E.

4.5.1. RTO Nomination and Selection. The ITT will initiate selection of an RTO in the T&E strategy prior to MS A, or within 30 days after program initiation. RTO selection must be based on a thorough analysis of potential RTO capabilities and resource availability. The ITT will submit their selection to the PEO for approval along with a capabilities and resource analysis. RTO selection conflicts will be presented to AFMC/A3 or AFSPC/A5, as appropriate, for arbitration before submission to the PEO. If an RTO is not needed, rationale will be documented and submitted to the PEO. After the PEO approves the RTO decision, the PM will provide that information to AFMC/A3 or AFSPC/A5, as appropriate, and the program element monitor (PEM) within 30 days for inclusion in the PMD. **Note**: The PEM is the person from the Secretariat or Air Staff designated in the PMD who has overall responsibility for the program element and who harmonizes program documentation.

4.5.2. Appropriate RTO Organizations. In all cases, the RTO must be qualified to oversee and/or conduct the required testing. During system development, several developmental test organizations may be needed, but only one will be designated as the RTO for a specific test phase. The designation of an RTO does not require all associated test activities to be conducted at that organization's geographic location.

4.6 Determining the Operational Test Organization. The operational test organization for all programs and projects will be determined using the three-column flow chart in **Figure 4.3.** The flow chart identifies the responsible (default) operational test organization for Air Force acquisition programs based on program ACAT, OSD OT&E Oversight status, and multi-Service applicability. The flow chart also identifies a process to transfer operational test responsibilities from MAJCOM test organizations to AFOTEC when requested by the MAJCOM and AFOTEC accepts. The flow chart will be used according to the following paragraphs (references cited in Figure **4.3)**.

***Figure 4.3. Determining the Operational Test Organization.**



4.6.1. Programs Requiring AFOTEC Conduct. As the Air Force OTA, AFOTEC will conduct operational testing for ACAT I, IA, II, OSD OT&E Oversight, and multi-Service acquisition programs as shown in Column 1 of **Figure 4.3**. AFOTEC will also conduct FOT&E for programs as described in paragraph **2.6.3** and as shown in Column 2. AFOTEC involvement will end at the completion of FOT&E (or I/QOT&E if no FOT&E is required) unless otherwise mutually agreed and documented in the TEMP or other program documentation.

***4.6.1.1.** In rare cases, an AFOTEC-owned program in **Figure 4.3**, Column 1, may be more appropriately executed by a MAJCOM operational test organization. If both AFOTEC and the MAJCOM mutually agree, then AFOTEC and the MAJCOM will notify AF/TEP of the need for an exception to policy.

***4.6.2. Programs Requiring MAJCOM Conduct.** As shown in Column 3, MAJCOM operational test organizations will conduct required operational testing for ACAT III and non-ACAT programs. MAJCOMs will also conduct operational testing for all routine post-I/Q/FOT&E fielded system upgrades, deficiency corrections, and sustainment programs. **Note**: See paragraph **3.10.1** for lead command designation. MAJCOMs may request AFOTEC to assume responsibility for operational testing (see paragraph **4.6.3.3**) and/or may request support according to paragraphs **3.9.8** and **4.6.5.**

4.6.3. Criteria for AFOTEC Re-Involvement. Column 2 addresses the selection of the lead operational test organization if Columns 1 and 3 do not apply.

4.6.3.1. If a program has completed I/Q/MOT&E with deficiencies or shortfalls having severe or substantial mission impacts, as identified in the AFOTEC final report, AFOTEC will conduct FOT&E for those deficiencies as shown in the left side of Column 2. When these post-I/Q/MOT&E programs have no deficiencies with severe or substantial mission impacts, the MAJCOM is responsible for continued operational testing.

4.6.3.2. Some acquisition program schedules may require MAJCOM testing of follow-on modifications, preplanned product improvements, and upgrades simultaneously with planned AFOTEC FOT&E. In these instances, AFOTEC and operational MAJCOM testers will coordinate through the ITT on the most efficient strategy for completing the required testing.

4.6.3.3. Post-I/Q/MOT&E and -FOT&E, MAJCOMs may request that AFOTEC remain involved (or become re-involved) in programs that are normally a MAJCOM responsibility (see right side of Column 2). These requests must include required documentation (i.e., JCIDS documents, CONOPS, and acquisition strategy) needed for AFOTEC to make an informed involvement decision. AFOTEC will use a repeatable, documented process with clearly defined criteria to determine post-I/Q/MOT&E or post-FOT&E involvement. AFOTEC will document their decision and provide timely notification to the HQ MAJCOM T&E OPR and HQ USAF/TEP. If the response time exceeds 30 days, AFOTEC will inform the MAJCOM on the reason for delay. Acceptance of test responsibility also means providing funds for test execution according to operational test funding guidance in AFI 65-601, Chapter 14

4.6.3.4. Some modifications, upgrades, etc., are large enough to be considered new acquisition programs. These are shown below the dashed line in Column 2. An additional indicator that a program may warrant AFOTEC involvement is the presence of new or revised JCIDS documentation validated by the JROC. ACAT I and II and OSD OT&E Oversight programs will be AFOTEC's responsibility. In these instances, systems normally re-enter the acquisition process at a milestone commensurate with the acquisition strategy.

4.6.4. Timing. MAJCOM or AFOTEC requests to transfer operational test responsibilities should be coordinated and resolved not later than 18 months prior to the first scheduled or required operational test event. Transfer of operational test responsibilities less than 18 months prior to test start may only be done by mutual agreement of all parties and HQ USAF/TE concurrence.

***4.6.5. Other Programs.**

***4.6.5.1.** Despite having a designated lead command per AFPD 10-9, some ACAT III, non-OSD Oversight programs support multiple users with differing requirements across an entire USAF-wide enterprise area. The lead MAJCOM may request AFOTEC involvement per Column 3 of **Figure 4.3**, or coordinate with appropriate HQ MAJCOM T&E functional offices for a multi-MAJCOM test approach.

***4.6.5.2.** Some programs may not be clearly "owned" by a MAJCOM or sponsor with an embedded operational test function. In these cases, the program's sponsor will coordinate with AFOTEC or the MAJCOM HQ OPR for operational testing to identify an appropriate venue for completing any required operational testing.

***4.6.6. Operational Test Coordination Meeting.** HQ USAF/TEP will chair an AFOTEC-MAJCOM operational test coordination meeting prior to annual POM development and submission to establish clear resourcing responsibilities. These meetings should occur at least 4 to 6 weeks prior to the PEO's or MDA's portfolio reviews for these programs. Operational test schedules pro-

jected five years ahead for all MAJCOM weapons systems will be reviewed. Program ITTs are expected to resolve as many issues and disconnects as possible before this meeting. Expected lead operational test organizations will be identified at least 18-24 months prior to projected test start dates to ensure that responsible organizations can plan for adequate test resources.

4.7. OSD Oversight Programs with Multiple Subparts. Some T&E Oversight programs, although listed as a single entity, have multiple subparts, each with its own set of test planning and reporting requirements to satisfy OSD's statutory needs. OSD representatives to the ITT are expected to identify which subparts are relieved of these requirements. In addition, some OSD Oversight programs may use or consist of components from non-OSD oversight programs. As a result, these components may be subject to increased OSD scrutiny and may require their own test plan approval and reporting. The ITT co-chairs will document these decisions and notify HQ USAF/TEP and the PEO.

4.8. Multiple Operational Test Organizations. If multiple operational test organizations within the Air Force are tasked to conduct testing concurrently, the ITT must be notified before planning begins and a lead operational test organization designated. All operational test plans must be reviewed by, and reports coordinated with, the lead operational test organization to ensure continuity of effort. This information must be kept current in the TEMP, integrated test concept (ITC), test plans, and PMD. For OSD OT&E Oversight programs, the lead operational test organization will comply with all oversight requirements according to **Attachment 2**.

4.9. Lead Service Considerations. When the Air Force is designated the lead Service for multi-Service T&E, the ITT will document the other Services' T&E responsibilities, resources, and methods to eliminate conflicts and duplication. When the Air Force is not the lead Service, Air Force testers will follow the lead Service's T&E policies. See the *Defense Acquisition Guidebook* and the *MOA on MOT&E* for more information.

4.10. Tester Inputs During Concept Refinement. Developmental and operational testers must assist requirements sponsors and acquisition personnel in developing AoA plans, AoAs, COAs, ICDs, EMAs, and TDSs. Testers will provide T&E inputs for each alternative developed. Criteria, issues, and measures such as COIs, measures of effectiveness (MOE), and measures of suitability (MOS) developed for these documents will be used in the T&E strategy and subsequent T&E plans.

***4.11. T&E Strategy (TES) Development.** ITT members must develop the TES according to DODI 5000.02, Enclosure 6. Space systems must also use NSS 03-01, Enclosure 1. The TES must integrate all T&E activities supporting the program and take full advantage of existing investments in DOD ranges and facilities. The TES must support both the requirements and acquisition strategies. All tests must have specific objectives and be organized to achieve the greatest possible synergy, efficiency, and effectiveness. The TES is considered the first iteration of the TEMP, so its structure should follow the TEMP format. DOT&E and USD(AT&L) approve the TES at MS/KDP A for OSD T&E Oversight programs; the MDA is the approval authority for all other programs. TES coordination follows the same process as prescribed for a TEMP (see paragraph **5.14**). Details about T&E planning and T&E processes can be found in the *Air Force T&E Guidebook* located on the HQ USAF portion of the Air Force Portal.

4.12. Early Planning for T&E Resources.

4.12.1. Securing T&E Ranges and Facilities. Test planners must contact potential test sites early to obtain estimates of costs and availability. HQ AFMC/A3 and the range or facility points of contact (POC) will provide information and assistance on using the Major Range and Test Facility Base (MRTFB) and other government test facilities. See DODD 3200.11, *Major Range and Test Facility Base (MRTFB)*, and AFI 99-109, *Major Range and Test Facility Base (MRTFB) Test and*

Evaluation Resource Planning. For space and space launch ranges, contact HQ AFSPC/A3/A5. See AFI 13-212, Vol I, *Range Planning and Operations*, about the use of test and training ranges.

4.12.2. Use of Government Test Facilities. The ITT will take full advantage of existing investments in DOD ranges, facilities, and other resources, including the use of embedded instrumentation. Test teams should plan to use Air Force test capabilities first, followed by MRTFB facilities, followed by non-DOD government facilities.

4.12.3. Use of Non-Government Facilities. Contractor facilities should only be used when government facilities are not available, cannot be modified, are too expensive, or are impractical to use. If the T&E strategy or ITC calls for testing at non-government facilities, the PM must conduct a cost benefit analysis, include these facility requirements in the RFP, and document the final choice in the TEMP.

***4.12.4. Use of Exercises and Experiments.** To the maximum practical extent, the USAFWC will assist Air Force test organizations gain access to exercises and experiments to take advantage of operationally realistic environments, high threat densities, massed forces, and other efficiencies. To the maximum extent possible, test organizations should participate in Joint Expeditionary Force Experiments, Advanced Process and Technology Experiments, and joint and Service war games. The goals of the exercise, experiment, or T&E activity must not be compromised. Experiments may include prototype systems with varying degrees of maturity and configuration control. See AFPD 10-23, *Air Force Innovation Program*, AFI 10-230, *Conduct of Key Exercises and Experiments*, and AFI 10-400, *Aerospace Expeditionary Force Planning*.

4.12.5. Testing in a Joint Environment. All testing must be structured to reflect the joint operational environment and missions in which the system will operate. Current T&E planning processes and methodologies must be updated to reflect the DOD's capabilities-based processes. See DOD's *Testing in a Joint Environment Roadmap* at http://www.dote.osd.mil/pubs.html.

4.12.6. Planning for Target and Instrumented Munitions Expenditures. Test organizations, in consultation with PMs, will plan for aerial target requirements according to AFI 99-108, *Programming and Reporting Aerial Target and Missile Expenditures in Test and Evaluation*. Test organizations and PMs must forecast their requirements for munition flight termination and telemetry kits according to AFI 99-120, *Forecasting and Programming Munitions Telemetry and Flight Termination Systems.*

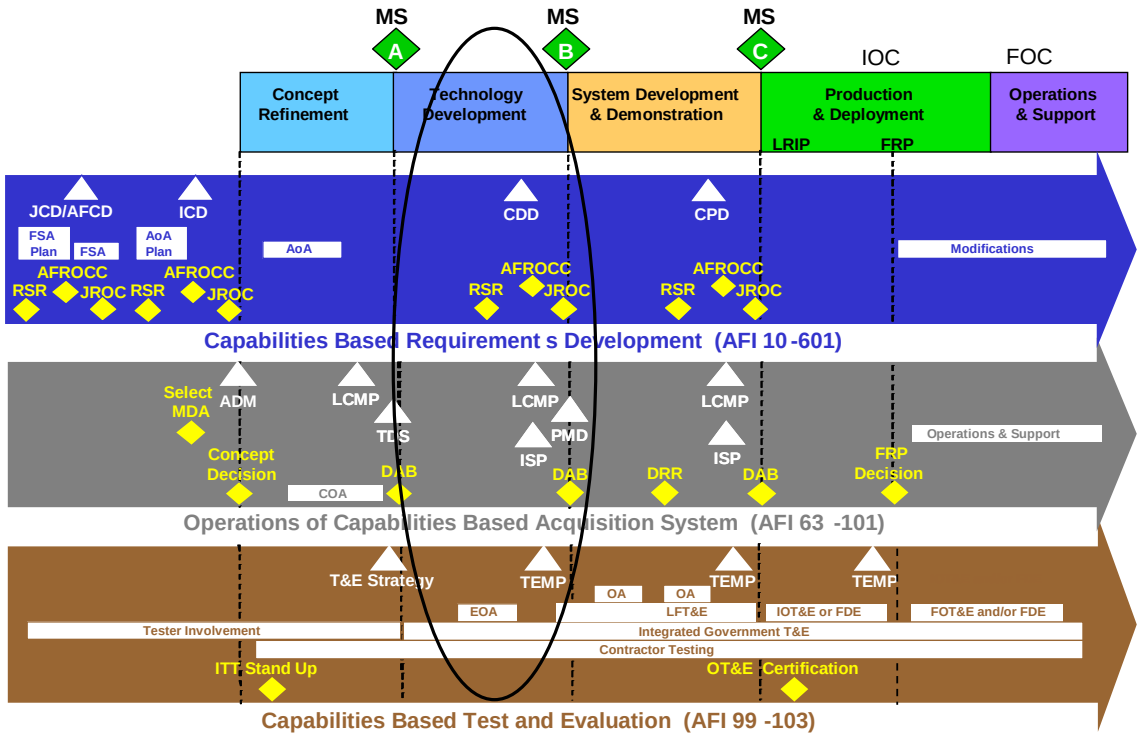
4.12.7. Foreign Materiel Acquisition and Exploitation. ITT members will consult with requirements, acquisition, and intelligence organizations to determine the need for foreign materiel resources. See AFI 99-114 for details.

Chapter 5

T&E ACTIVITIES SUPPORTING MILESTONE B DECISIONS

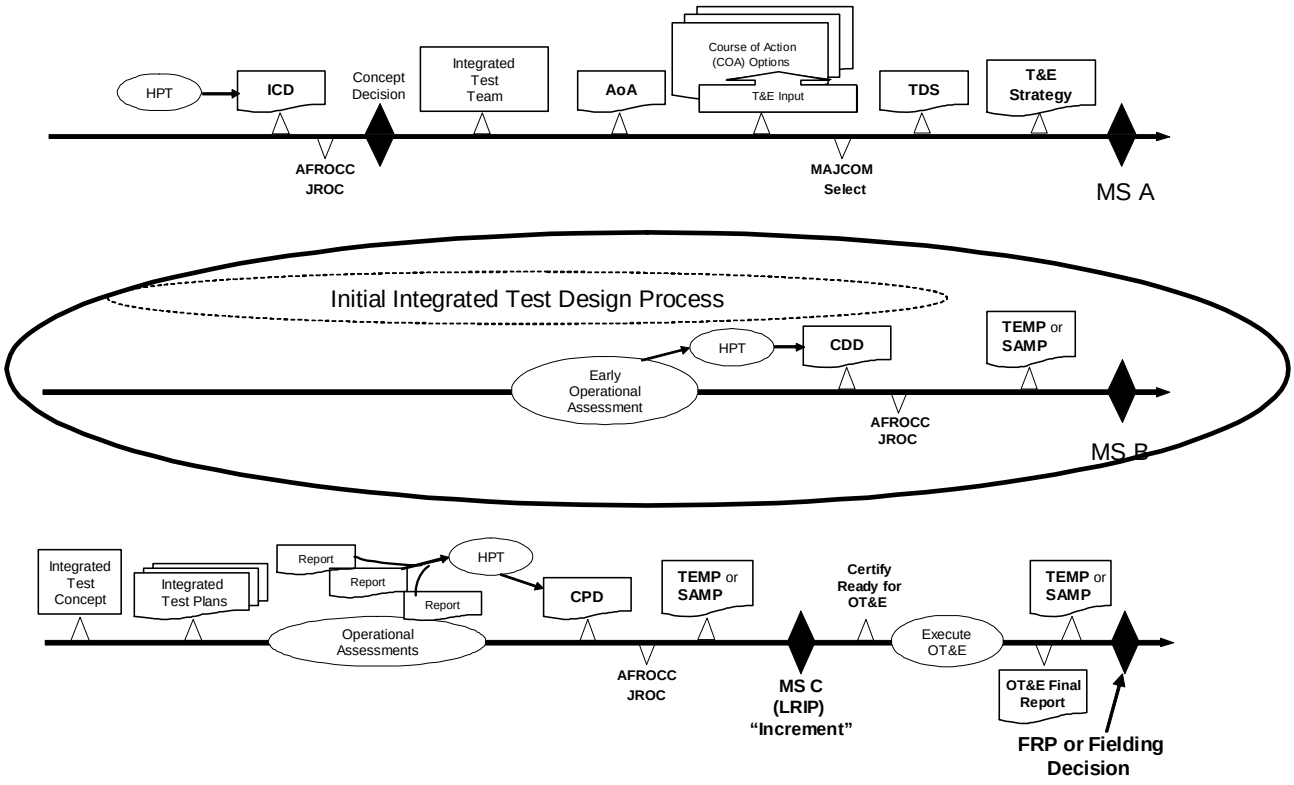
5.1. Post Milestone A. The ITT will begin integrated test planning based on the T&E strategy. Sustained, high quality tester involvement and collaboration with requirements sponsors and system developers must continue throughout the Technology Development phase as shown in **Figures 5.1** and **5.2**. This chapter addresses test **execution** occurring during the Technology Development phase. It also focuses on early T&E **planning** considerations after MS A in preparation for the SDD phase. **Note**: The timing and documentation of T&E activities for space system acquisition programs is different because KDPs for these programs are phased earlier than typical DOD 5000-series programs as described in *NSS 03-01*.

Figure 5.1. Integration of Requirements, Acquisition, and T&E Events Prior to Milestone B.



Note: SAMPs will be phased out as LCMPs are phased in.

Figure 5.2. Integrated Testing Concept Flowchart.



***5.2. Initial Integrated Test Design (IITD) Process.** The IITD starts the iterative process of test concept and test plan development that culminates in executable test plans after MS/KDP B. The ITT should initiate the IITD process to refine the strategy for T&E into a feasible test approach for the selected COA option, EMA, ICD, and CONOPS. All test planners must first outline their initial T&E designs, objectives, and known requirements to support development of the MS/KDP B TEMP and the post MS/KDP B integrated test concept (ITC). The ITT uses a systems engineering approach to identify and integrate the initial COIs, CTPs, test objectives, MOEs, MOSs, resources, and schedules. Operational testers, in conjunction with MAJCOM requirements and T&E offices, will develop COIs in the form of questions to be answered during evaluation of a system's overall effectiveness, suitability, and operational capability. The IITD process culminates in an ITC that includes an initial description of test scenarios, test locations, exercises, T&E methodologies, operational impacts and issues, and projections for future capabilities. All test members of the ITT will coordinate on the ITC.

***5.3. Critical Technical Parameters (CTP).** CTPs are measurable, critical, system characteristics derived from requirements documents and architectures that, when achieved, allow the attainment of operational requirements. They are technical measures. The ITT will ensure CTPs are testable and are traceable to key system requirements. CTPs should be developed to address all major areas of system performance and should correlate to all key requirement areas, to include all KPPs. CTPs must reflect the system's definition and design for all elements such as hardware components, software, architec-

tures, personnel, facilities, support equipment, and data. Failure to achieve a CTP should be considered an indicator that the system development schedule is behind or the system will likely not achieve an operational requirement.

***5.4. Formal Contractual Documents.** ITT members will review the RFP and statement of work (SOW) to ensure contractor support to government T&E is included and properly described. For guidance, use USD(AT&L)'s guidebook, *Incorporating Test and Evaluation into Department of Defense Acquisition Contracts*. The ITT will review the Contract Data Requirements List (CDRL) to ensure it describes the content, format, delivery instructions, and approval and acceptance criteria for all deliverable T&E data. The ITT will also review these drafts to ensure user-defined capabilities have been accurately translated into system specifications and provisions are made for the following:

5.4.1. Government review and approval of contractor test plans and procedures before tests commence.

5.4.2. Government insight into contractor testing to ensure systems are maturing as planned.

5.4.3. The contractor's DR system to interface with the government's DR system, including TO-00-35D-54 compliant processes and methodologies, and portability of data into government information management systems.

5.4.4. Contractor T&E support such as failure analyses, T&E data collection and management, operation of unique test equipment, provision of logistics support, and test reports.

5.4.5. Contractor participation in government test planning forums such as the ITT.

***5.5. Common T&E Data Management.** The PM will ensure a common T&E database accessible to all program stakeholders on a need-to-know basis will be established as early as practical and used for all T&E data for the system under test. The ITT will ensure the RFP and SOW support inclusion of contractor T&E data as part of this database, as well as all T&E data from previous increments and real world operations. Operational testers may use data from sources such as DT&E, integrated testing, and OAs to augment or reduce the scope of dedicated operational testing if the data can be verified as accurate and applicable. Operational testers must allow open data sharing and non-interference observation by all other testers, the system developer, contractor, operators, DOT&E, and the PM.

5.5.1. Tracking T&E Data. All test teams will establish rigorous data collection, control, accountability, and security procedures for T&E data. To avoid using questionable test data, test teams must verify the origin and integrity of any data used in final reports, i.e., whether the data came from contractors, DT&E, integrated testing, other Service OTAs, deployed assets used in real world operations, or dedicated Air Force operational tests. T&E data from deployed early prototypes used and evaluated in real world operations should be properly archived. See paragraph **6.9** for more information.

5.5.2. Contractor T&E Data. Test teams and TIPTs should use as much contractor T&E data as possible if its accuracy can be verified. Contractor T&E data should be visible in the common T&E database.

5.6. Limitations on Contractor Involvement in Operational Testing. Title 10 §2399(d) and (e) place limits on contractor involvement in IOT&E of ACAT I and II programs. Air Force policy applies these statutory limitations to all operational test and evaluation programs regardless of ACAT.

5.6.1. System Contractors. According to Title 10 §2399(d) and Air Force policy, operational testers must strictly avoid situations where system contractors could reduce the credibility of operational test results or compromise the realistic accomplishment of operational test scenarios. Title 10 permits limited system contractor involvement in operational testing if the operator plans for the

contractor to be involved in the operation, maintenance, and support of the system when deployed in combat.

5.6.2. System Contractor Support to Operational Testing. System contractors may be beneficial in providing logistic support and training, test failure analyses, test data, and unique software and instrumentation support that could increase the value of operational test data. Explanations of how this contractor support will be used and the mitigation of possible adverse effects must be described in the TEMP, ITC, and developmental and operational test plans.

5.6.3. Support Contractors. According to Title 10 §2399(e) and Air Force policy, support contractors may not be involved in the establishment of criteria for data collection, performance assessment, or evaluation activities for operational testing. This limitation does not apply to a support contractor that has participated in such development, production, or testing solely in test or test support on behalf of the government.

5.7. Integrating Specialized Testing. The ITT must ensure the following types of testing are conducted when appropriate and are described in the information support plan (ISP), ITC, TEMP, and relevant test plans.

5.7.1. Interoperability certification testing, security testing, and IA testing must be integrated sufficiently early and at the correct points in system development. New or modified software applications should not be connected to a DOD-owned network without these assessments through Defense Information Systems Agency. Information technology (IT) and National Security Systems (NSS) will be tested according to DODI 8500.2 and CJCSI 6212.01, *Interoperability and Supportability of Information Technology and National Security Systems*. Use the *IT Lean Guidebook* for IT systems in development or sustainment, or as directed.

***5.7.2.** For assessing risk levels in these systems, use DOT&E's *Guidelines for Conducting Operational Test and Evaluation for Software-Intensive System Increments*, June 16, 2003; and DOT&E's *Procedures for Operational Test and Evaluation of Information Assurance in Acquisition Programs*, January 21, 2009. These policies are located on the HQ USAF/TE portion of the Air Force Portal.

5.7.3. Systems designated as computer network attack (CNA) capabilities will be tested according to CNA technical assurance standards found in DODD O-3600.3, *Technical Assurance Standard for Computer Network Attack (CNA) Capabilities*, and other implementing directives.

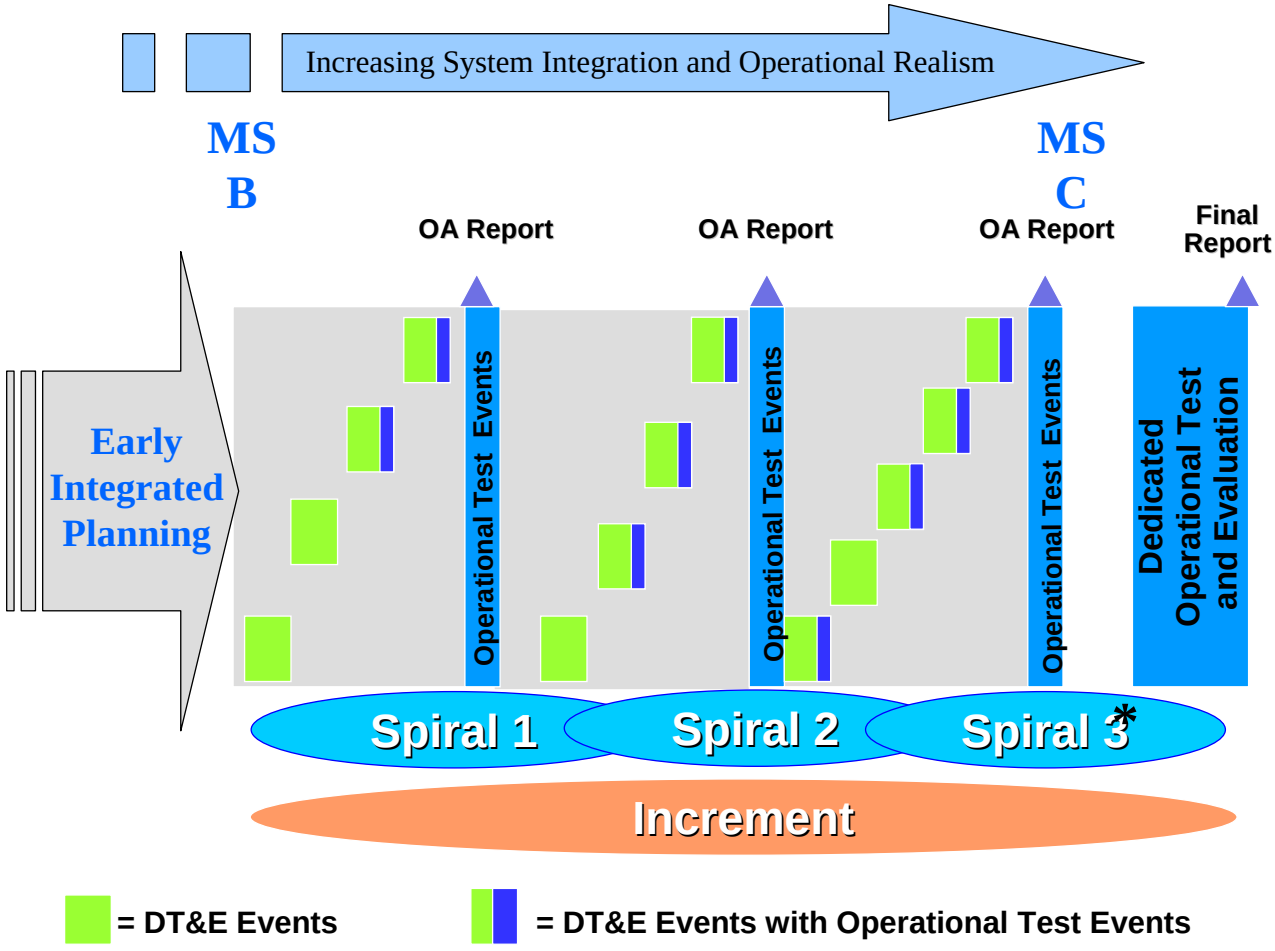
***5.8. Modeling and Simulation (M&S) in Support of T&E.** Plan to use accredited and reusable M&S tools and DSMs from the Air Force Modeling and Simulation Resource Repository (AFMSRR) before building new M&S resources. Check the AFAMS website at http://www.afams.af.mil/. The PM will document how M&S supports integrated testing in the Modeling and Simulation Support Plan and the TEMP. For additional policies on using M&S, see AFI 16-1001, *Verification, Validation, and Accreditation (VV&A)*, and AFI 16-1002.

5.9. Early DT&E Planning.

5.9.1. Planning for Integrated Testing. The ITT will integrate operational test events throughout DT&E to provide additional test realism, decrease overall duplication of effort, and increase test efficiency. Operational suitability will be given equal consideration as operational effectiveness. (See AFI 10-602 and *DOD Guide for Achieving Reliability, Availability, and Maintainability*.) Test limitations and deferrals must be explained in test plans and the TEMP. Multiple sets of test objectives will be accomplished together within statutory and regulatory guidelines. **Figure 5.3** is a notional model of how developmental and operational test events can be integrated to reduce the scope, cost, and schedule of T&E conducted during the SDD phase. Integrated testing will be the

preferred approach unless it can be shown that it adds unacceptable costs, delays, or technical risks. Existing safety review processes will not be compromised. See additional information in paragraphs **6.2** through **6.5**.

Figure 5.3. Early Planning for Integrated Testing Activities.



5.9.2. Using MAJCOM Units to Support DT&E. SPOs or government developmental test organizations may request operational MAJCOM units to support DT&E activities only after obtaining concurrence from that organization's MAJCOM headquarters. Such tests should be restricted to low-risk DT&E activities to demonstrate military utility under the direct supervision of the PM's or a government DT&E organization's assigned test manager. These activities will be called "DT&E Assists" (or similar name) to indicate they are not operational testing.

5.10. Live Fire Test and Evaluation (LFT&E) Planning. The following paragraphs supplement statutory direction in Title 10 §2366. The *Defense Acquisition Guidebook*, Chapter 9, provides additional guidance for implementing LFT&E legislation and OSD requirements.

***5.10.1. Implementation.** LFT&E results must support system design and production decisions for covered systems. The focus and funding for LFT&E should be on the system components immediately related to the development or modification program, but the resultant evaluation must be

at the system level. PMs should contact the 46 TW, 780 TS/TD (Technical Director), Eglin AFB, for assistance with development of LFT&E strategies, plans, waivers, and alternative plans.

***5.10.2. Determining Covered System Status.** The PM and ITT must first determine if their system is a "covered system" or "covered product improvement program." PEOs must continually review their portfolios for any programs "covered" under Title 10 §2366. When a potential LFT&E candidate is identified, the ITT, PM, 780 TS/TD, and HQ USAF/TEP must be notified as early as possible. The 780 TS/TD can facilitate discussions to help determine a corporate Air Force position and develop a recommendation to DOT&E.

***5.10.3. LFT&E Strategy Approval.** As soon as an affirmative determination of covered status is made, the PM will develop a LFT&E strategy with the assistance of the 780 TS/TD. The PM is responsible for communicating and coordinating the LFT&E strategy with DOT&E and will determine the appropriate method. The strategy must be structured so any design deficiencies uncovered during EMD may be corrected before proceeding beyond LRIP. Technology projects and ACTDs meeting the statutory criteria are also required to undergo LFT&E. The ITT will describe the LFT&E strategy and plans in the TEMP. LFT&E must be fully integrated into the continuum of testing. SAF/AQ will approve the LFT&E strategy before it is forwarded to DOT&E for final approval prior to MS/KDP B (or equivalent point) or a waiver must be submitted.

5.10.4. Requests for LFT&E Waivers. If realistic, full-up, system-level survivability or lethality testing of a covered system is unreasonably expensive and impractical, the ITT and/or PM may submit an LFT&E waiver request and alternative strategy to SAF/AQ for Service-level approval. After SAF/AQ approval, LFT&E waiver requests and alternative strategies are forwarded to DOT&E and USD(AT&L) prior to MS B. Upon final OSD approval, DOT&E issues a report and formal certification to Congress. After MS B, DOD cannot grant waivers to full-up testing except through congressional direction. Document the LFT&E waiver in the TEMP.

5.10.5. Alternative LFT&E Strategy. The alternative strategy does not alleviate the statutory requirement for survivability or lethality testing. The alternative strategy must include LFT&E of components, subassemblies, and/or subsystems which, when combined with M&S and combat data analysis, will result in confidence in the survivability (or lethality) of the system.

5.10.6. Alternative Strategy and Testing for Major Modifications. In the case of major modifications or new production variants, the alternative LFT&E strategy and detailed plans must focus on configuration changes that could significantly affect survivability or lethality. Potential interactions between portions of the configuration that are changed and those that are not changed must be assessed. The assessment results must include a whole system analysis of the survivability and vulnerability impacts on the total system. Alternative LFT&E are not required on components or subsystems unrelated to the modification program.

5.10.7. Detailed LFT&E Plans. DOT&E reviews and approves all LFT&E plans prior to commencement of LFT&E. All LFT&E must be completed and test reports submitted 45 calendar days before the beyond-LRIP decision review. The *Defense Acquisition Guidebook* lists the mandatory contents of LFT&E plans.

5.10.8. Warfighter Survivability. An assessment of force protection equipment and warfighter survivability will also be conducted as required according to Title 10 §139(b)(3), Public Law (P.L.) 108-375 §141, and USD(AT&L) guidance.

5.11. Operational Assessment Planning and Execution.

5.11.1. Early Operational Assessments (EOA). During the Technology Development phase, EOAs are planned and conducted as required to provide operational inputs to requirements and sys-

tem development prior to MS B. The EOA supports development of the Capability Development Document (CDD), integrated test concepts and plans, and the MS B decision. The scope and content of EOAs should be tailored to obtain very early estimates using any available data.

5.11.2. Operational Assessments. OAs conducted in the SDD phase are outlined in the TEMP prior to MS B. OAs must be tailored to emphasize an integrated testing approach for assessing system capabilities in preparation for dedicated operational testing as shown in **Figure 5.3**.

***5.12. Tester Involvement in the Capability Development Document (CDD).** Testers must continue assisting requirements sponsors in refining operational capability requirements and CONOPS according to AFI 10-601 and AFPD 10-28. Developmental and operational testers will participate in HPTs by providing technical and operational expertise, lessons learned, and data from EOAs, OAs, fielded prototypes, and integrated testing. Testers will help ensure system key performance parameters are attainable, testable, and accurately expressed in RFPs and SOWs.

***5.13. Life Cycle Management Plans (LCMP).** The PM develops the LCMP which integrates all aspects of acquisition and sustainment into a single integrated life cycle plan according to AFI 63-101. The LCMP is the overarching document that encompasses and integrates information from all other program plans and assessments. It typically includes a summary of the program's strategy for T&E. It is required for all programs on the APML, systems identified in AFPD 10-9, and new space systems. For ACAT-designated programs not on the OSD OT&E Oversight List that do not develop a stand-alone TEMP, the PM will include in the LCMP critical T&E planning information that is normally captured TEMP Parts II, III, IV, and V. The PM must include all ITT members when preparing the T&E portions of the LCMP. See Air Force Pamphlet (AFPAM) 63-128, *Guide to Acquisition and Sustainment Life Cycle Management*, for LCMP details. For new space programs, the LCMP incorporates all requirements of the IPS and captures the life cycle support strategy as mandated by NSS 03-01. **Note**: Whenever AFI 99-103 refers to the TEMP, it also refers to the LCMP, if appropriate, for non-OSD OT&E Oversight programs.

***5.13.1.** DELETED

***5.13.2.** DELETED

***5.14. Test and Evaluation Master Plan (TEMP).** The TEMP integrates the requirements, acquisition, T&E, systems engineering, and LCMP or IPS sustainment strategies with all T&E schedules, funding, and resources into an efficient continuum of integrated testing. The PM, working through the ITT, is responsible for preparing a TEMP prior to MS/KDP B for all assigned ACAT I, IA, II, and other programs on OSD T&E Oversight according to DODI 5000.02, Enclosure 4, Table 3, and Enclosure 6. PMs may tailor the content and format of the TEMP within regulatory guidelines to fit individual program needs and satisfy MDA requirements. For programs on the OSD T&E Oversight List, a stand-alone TEMP is required. For non-OSD T&E oversight programs, the PM shall produce a stand-alone TEMP, or incorporate applicable TEMP content into the program LCMP per paragraph **5.13**.

5.14.1. TEMP Organization. The TEMP will be written according to the format in the *Defense Acquisition Guidebook*, Chapter 9. The preferred option for TEMP organization is to put all DT&E and integrated testing in Part III, with dedicated operational testing in Part IV. For non-OSD Oversight programs, the TEMP format may be modified to facilitate program accomplishment. The completed TEMP conveys:

5.14.1.1. The linkage between the requirements, acquisition, T&E, and sustainment strategies.

***5.14.1.2.** The linkage between CONOPs, the SEP, operational requirements and architectures, system characteristics, CTPs, COIs, MOEs, MOSs, and increments of capability.

5.14.1.3. Organizational responsibilities for the contractor(s), PM, RTO, PTO(s), and operational testers.

5.14.1.4. Integrated test methodologies.

5.14.1.5. Test resources.

5.14.1.6. Test limitations and test deferrals (see paragraphs **5.19** and **6.4.2**).

5.14.1.7. The LFT&E strategy and plans, and the strategy for system certification of readiness for dedicated operational testing.

5.14.1.8. MAJCOM testing, to include operational testing for follow-on increments in Part IV.

5.14.2. TEMP Submittal and Coordination. Obtain the required TEMP signatures as shown in the TEMP Signature Page Format in the *Defense Acquisition Guidebook*, paragraph **9.10**.

5.14.2.1. The ITT will forward a TEMP final draft "in parallel" to all stakeholder organizations represented on the ITT for pre-coordination review. ITT representatives are expected to verify concurrence or identify outstanding issues within 30 days. Dissenting organizations must provide a position statement, to include alternatives, or formal non-concurrence on the draft TEMP within this timeframe. Following this pre-coordination period, the PM will sign the TEMP and staff in parallel to all required "concurrence signature" organizations below the Air Staff level. After "concurrence signatures" are obtained, the TEMP will be forwarded to the Air Staff PEM.

5.14.2.2. For all OSD T&E Oversight programs, the PEO will submit the TEMP to the PEM, who will coordinate through required Air Staff offices, HQ USAF/TE, and the SAE, in that order, for formal Service-level approval. The SAE will submit the TEMP to OSD (i.e., USD(AT&L)/DS and DOT&E) according to paragraphs **3.3.2**, **3.4.5**, and **3.5.5**.

***5.14.2.3.** For all other programs **not** requiring OSD approval, the PEM will ensure the SAE (or designated representative) signs as the final Service approval authority. If the SAE signs the TEMP, then HQ USAF/TE will sign as the "DOD Component Test and Evaluation Director." If the SAE is **not** signing, no signature is required for the "DOD Component Test and Evaluation Director."

5.14.3. Multi-Service TEMPs. The lead Service is responsible for coordinating multi-Service TEMPs. Signatures from the "concurrence signature" organizations in the other participating Services must be attained before TEMP submission to the Service T&E executives, the SAE (or MDA if appropriate), and OSD.

5.14.4. Schedule. TEMPs requiring OSD approval should be submitted to the PEO for review and signature 120 days prior to the decision review. After the PEO signs, the TEMP goes to the PEM not later than 90 days prior to the decision review for HQ USAF (i.e., Service-level) coordination and HQ USAF/TE and SAE approval. Not later than 45 days prior to the decision review, the SAE sends the TEMP to OSD for review and approval. If OSD has issues, they may send the TEMP back to the PEM for changes. After OSD's changes are incorporated, the SAE submits the **final** Service-approved TEMP 10 days prior to the decision review for **final** OSD approval. See **Attachment 2** for a summary of coordination requirements.

5.14.5. TEMP Updates and Changes. The PM and ITT will update the TEMP prior to MS C and the FRP decision according to DODI 5000.2. Changes will also be made whenever the program has changes as defined by the PM, DOT&E, or HQ USAF/TE. Staffing will proceed as described in paragraphs **5.14.2** through **5.14.4**.

5.14.6. When a TEMP Is No Longer Required. Once a program's acquisition is complete and COIs satisfactorily resolved, a TEMP may no longer be required. The ITT should initiate requests to cancel the TEMP for programs on OSD T&E Oversight. Submit requests and justification through HQ USAF/TE to OSD. See *Defense Acquisition Guidebook*, Chapter 9.

5.15. Testing COTS, NDI, and GFE. PMs must not disregard T&E of COTS, NDI, and GFE. The operational effectiveness, suitability, and operational capabilities of these items and any military-unique applications must be tested and evaluated before a FRP or fielding decision. The ITT will plan to take maximum advantage of pre-existing T&E data to reduce the scope and cost of government testing. More information is available in USD(AT&L)'s handbook SD-2, *Buying Commercial & Non-developmental Items: A Handbook*, available at http://dodssp.daps.dla.mil. IT and NSS should be tested according to DODI 8500.2 and CJCSI 6212.01.

5.16. T&E Funding Sources. The funding sources for T&E depend on the nature and purpose of the work and the type of testing. Detailed guidance is in DOD 7000.14-R, *Department of Defense Financial Management Regulation (FMRS)*, Vol 2A, Chapter 1, and AFI 65-601, Vol 1, Chapter 14. Test resource advisors must ensure compliance with these documents before requesting and committing funds. Direct assistance is available from SAF/FMBI, SAF/AQXR, and HQ USAF/TER.

5.17. Deficiency Reporting (DR) Process. All Air Force organizations must use TO 00-35D-54, Chapter 2, and AFI 63-501 according to AFPD 63-5, *Quality Assurance*. Directions for technical data deficiencies are in TO 00-5-1, *Air Force Technical Order System*. The PM has overall responsibility for establishing and administering a DR process and procedures for reporting, screening, validating, evaluating, tracking, and resolving DRs originating from government sources. A waiver must be attained from HQ AFMC/A4Y if the required DR system is not used. If a contractor-based DR system is planned, the RFP and SOW must require the contractor's DR system to interface with the government's DR system. See paragraph **6.10**.

5.18. Program Management Directive (PMD). The PMD provides official HQ USAF documentation and direction for Air Force programs (both acquisition and sustainment) and associated T&E activities. ITT members will review PMDs to ensure government test organizations are in compliance and their key responsibilities are correctly identified so as to ensure fully integrated testing.

5.19. Test Deferrals, Limitations, and Waivers. A test deferral is the movement or delay of testing and/or evaluation of a specific CTP, operational requirement, or COI to a follow-on increment. A test limitation is any condition that hampers but does not preclude adequate test and/or evaluation of a CTP, operational requirement, or COI during a T&E program. The ITT and the PM will document test deferrals and test limitations in test plans and the TEMP. Test limitations and test deferrals do not require waivers, but must be described in test plans and the TEMP, to include a revised timeline for decisions and reports. These test limitations and test deferrals are considered approved when the parent document is approved. Waivers for not conducting OT&E mandated by statute or this AFI will not be approved. (See **Attachment 1** for definitions and paragraph **6.4.2** for more details.)

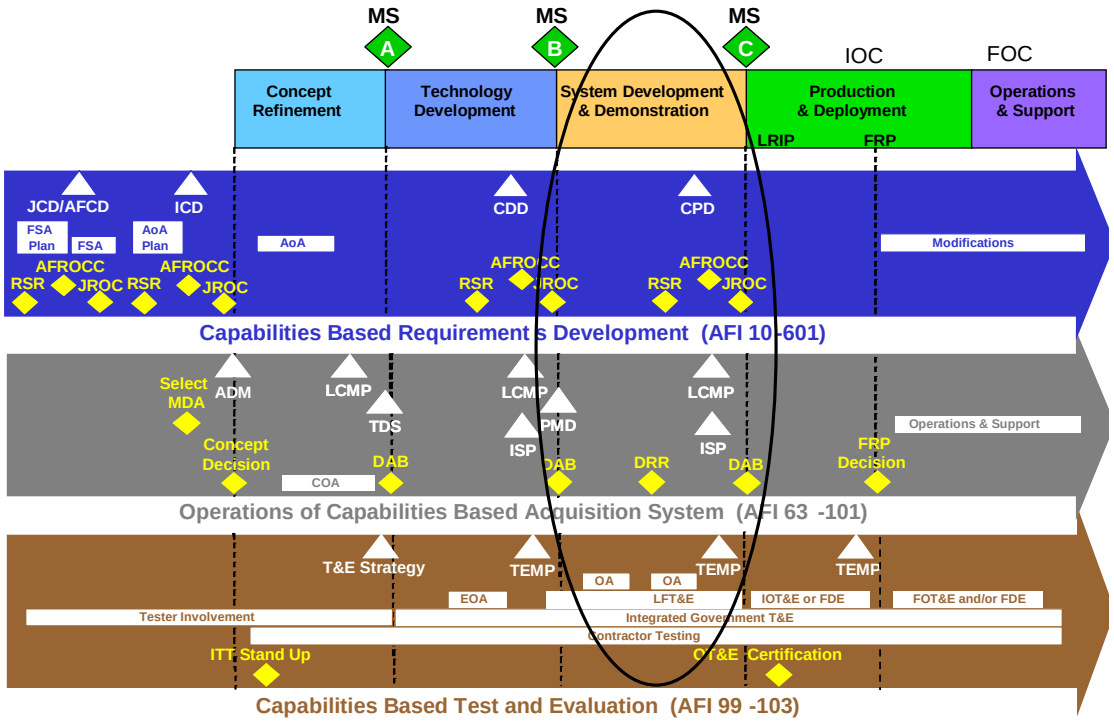
5.20. Precedence Ratings. To help prioritize T&E projects, all systems receive a precedence rating based on the nature of the system, its contribution to national security, and its overall Air Force mission according to AFI 16-301, *U.S. Air Force Priority System for Resources Management.* The type of testing conducted has no impact on the assigned precedence rating assigned. Everyone involved in the program will use the assigned precedence rating when scheduling test resources.

Chapter 6

T&E ACTIVITIES IN SUPPORT OF MILESTONE C AND PRODUCTION DECISIONS

6.1. Post Milestone B. The ITT will direct the execution of test plans that are integrated and activities supporting the MS C, FRP, and fielding decisions shown in the oval in **Figure 6.1**. This chapter focuses on test execution during the SDD and Production and Deployment phases as well as follow-on increments and sustainment during the Operations and Support phase. **Note**: The timing and documentation of T&E activities and documentation for space system acquisition programs is different because KDPs for these programs are phased earlier than typical DOD 5000-series programs as described in *NSS Acquisition Policy 03-01*.

Figure 6.1. Integration of Requirements, Acquisition, and T&E Events Prior to Milestone C.

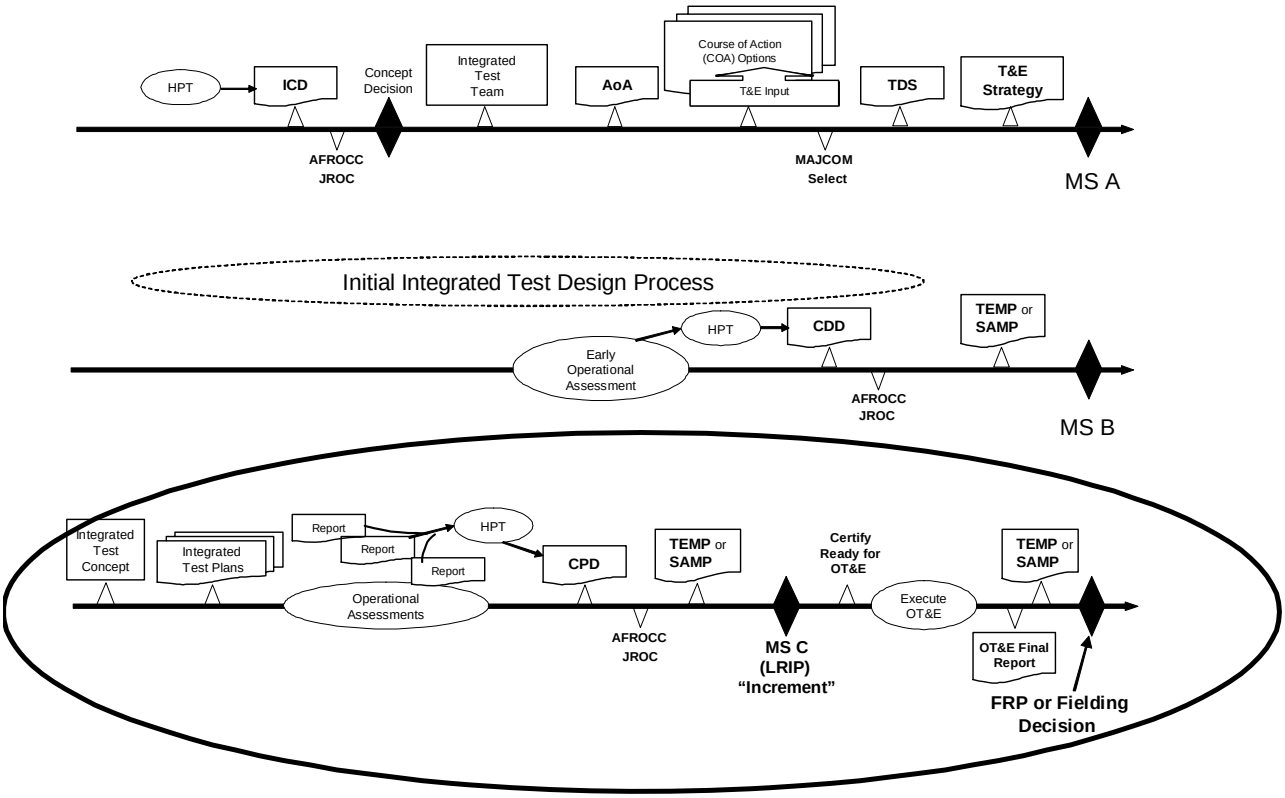


Note: SAMPs will be phased out as LCMPs are phased in.

6.2. Developing the Integrated Test Concept (ITC). The ITT should continue refining the IITD into an ITC to support the development of test plans that are integrated as shown in the oval in **Figure 6.2**. The ITC should describe an executable test approach for the validated operational capability requirements. Building on the work done in paragraph **5.2**, continue using the systems engineering approach to refine and finalize the COIs, CTPs, test objectives, MOEs, MOSs, measures of performance (MOP),

resources, and schedules. Test teams will execute test plans that are integrated and meet as many DT&E and operational test objectives as possible prior to dedicated operational testing. A series of OAs should be integrated into the T&E continuum to reduce program risk and minimize the overall number of test events without compromising the requirements of Title 10. Operational test organizations will take every available opportunity to provide early, written feedback to the PM in order to help "vector" programs for successful certification of readiness for, and conduct of, operational testing.

Figure 6.2. Integrated Testing Concept Flowchart.



***6.3. Developing Test Plans That Are Integrated.** The ITC integrates all individual contractor and government test plans into an interlocking series or matrix of evaluations focused on the current increment, with follow-on increments described in lesser detail. A single program test plan is not required. The ITT must plan for OAs intermingled with operationally relevant DT&E to produce increasing amounts of operationally relevant data within each increment. The ITC should describe M&S tools and DSMs for test design, systems engineering, and data evaluation, and how these supplement, augment, and extrapolate empirical T&E data wherever practical.

***6.3.1.** These test plans should support each increment with DT&E and an OA (if appropriate) addressing system maturity, operational impacts, and readiness for dedicated operational testing. OA reports should be planned to describe system capabilities and limitations as measured against operational requirements and CONOPS for that increment. Timely, credible, and continuous feedback

must be provided to developers and decision makers. These test plans should address most of the COIs, MOEs, and MOSs before dedicated operational testing begins.

6.3.2. These test plans should culminate with dedicated operational testing that concentrates on mission impacts and unanswered COIs, MOEs, MOSs, and MOPs. The operational test plan may use operationally relevant data collected during previous testing to verify system capabilities in the approved capability production document (CPD) for the fielded item.

6.4. Realistic Testing. Title 10, OSD policy, and Air Force policy require operational testers to conduct tests in as realistic an operational environment as possible to evaluate a system's overall effectiveness, suitability and operational capability and to assess impacts to wartime and peacetime operations. Test scenarios should be developed that reflect progressively more strenuous conditions. See descriptions of operational testing in paragraph **2.6** and the *Defense Acquisition Guidebook*, Chapter 9.

6.4.1. Limitations on Use of M&S. According to Title 10 §2399(h), dedicated OT&E will not be based solely on computer modeling, simulation, or an analysis of system requirements, engineering proposals, design specifications, or any other information contained in program documents. M&S tools and DSMs must receive sufficient verification, validation, and accreditation (VV&A) according to AFI 16-1001, AFI 16-1002, and AFI 14-206, *Modeling and Simulation*.

6.4.2. Deferment of Operational Testing. Operational testers will not defer testing of any COIs or operational requirements to future increments unless planned for in the acquisition strategy, TEMP, and ITC. If an unplanned deferral is unavoidable at the MS C or FRP decision, the MDA, in consultation with HQ USAF/TE, will decide on the best strategy for completing the deferred testing. The decision will be documented in an approved ADM and TEMP, and an OT&E waiver is not required. See paragraph **5.19**.

6.4.3. Support of AFOTEC-Conducted Operational Testing. MAJCOM operational units, ALCs, and DT&E organizations may be tasked to support AFOTEC-conducted operational testing. This support will be documented in PMDs, TEMPs, TRPs, test plans, MOAs, and directed in MAJCOM test project orders. AFOTEC will prepare TRPs in time to budget during the POM cycle. Test resource shortfalls and proposed solutions will be submitted to appropriate resource forums in HAF MD 1-52.

6.5. Integrated Technical and Safety Reviews. Independent government technical and safety personnel will examine the technical and safety aspects of T&E plans that involve government resources prior to commencement of test activities. All test organizations must establish procedures for when and how these reviews will be accomplished.

6.5.1. Technical Review Board (TRB). The TRB assesses the soundness of system designs and test plans to reduce test risk. Technically qualified personnel with test management experience, but who are independent of the test program, will perform these reviews. As a minimum, technical reviews will assess test requirements, techniques, approaches, and objectives. The TRB will also ensure that environmental analyses have been completed as required by AFI 32-7061, *The Environmental Impact Analysis Process*, and are referenced in the test plan.

6.5.2. Safety Review Board (SRB). The SRB assesses whether the T&E project's safety plan has identified and mitigated all health and safety hazards according to AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection and Health (AFOSH) Program*. SRB members must be technically qualified and independent of the test program. At the recommendation of the SRB, the PM and all test organizations will eliminate or mitigate identified hazards. All test organizations will set up procedures for controlling and supervising tests consistent with the risk involved and according to local range safety criteria. See AFI 91-202, *The US Air Force Mishap Prevention Program*. Mishap accountability must be clearly established according to AFI 91-204,

Safety Investigations and Reports, prior to conducting tests. If humans are used as test subjects, the level of risk to the human must be documented according to DODD 3216.2, *Protection of Human Subjects and Adherence to Ethical Standards in DOD-Supported Research*.

6.5.3. Nonnuclear Munitions Safety Board (NNMSB). The NNMSB will review and approve all newly developed live, uncertified munitions, fuses, and initiating devices prior to airborne testing or release according to AFI 91-205, *Nonnuclear Munitions Safety Board*.

6.6. Certification of System Readiness for Dedicated Operational Testing. The PM will implement a system certification and operational test readiness review process as early as practical during SDD. The certification process in AFMAN 63-119 is mandatory for reviewing all programs on the OSD T&E Oversight List, programs on the Air Force non-space Acquisition Program Master List (APML), and space programs designated by the Air Force SAE for space. Sustainment programs on the Sustainment Program Master List (SPML) and other acquisition projects or sustainment actions falling below APML or SPML thresholds are highly encouraged to follow this process. The process and reporting of results may be tailored to suit program objectives as long as the requirements of AFMAN 63-119 are complied with. See DODI 5000.2, paragraph E5.6, for additional requirements.

***6.6.1. The Readiness Certification Process.** The OT&E Certification Official determines the overall scope and schedule for the operational test readiness review and certification process according to AFMAN 63-119, **Chapter 1**. The certification process must be a continuous effort, not a single event in time. How and when the certification process is implemented will be described in the TEMP. To be certified ready for dedicated operational testing, the system must be mature, operationally representative, demonstrate stabilized performance in an operationally relevant environment, and all necessary test support must be available as planned. The system must have a high likelihood of a successful operational test. Identified shortfalls will be remedied before dedicated operational testing starts or negotiated work-around solutions developed An optional automated certification process tracking tool for all templates is available on the HQ USAF/TE portion of the Air Force Portal or on SAF/AQ's web site, www.safaq.hq.af.mil/. Modify this tool as needed to match any changes made to the templates.

6.6.2 Final Certification of Readiness for Dedicated Operational Testing. Final certification review and briefing of system readiness must be completed approximately 45 days prior to the planned start of dedicated operational testing to allow time for last minute adjustments. This time may be shorter if the PM and operational testers mutually agree. Certification requires a formal briefing to the OT&E Certification Official. The briefing shall address DT&E results, conclusions, recommendations, and an assessment of the system's capability to meet operational requirements. A certification of readiness memo is required 15 days prior to the start of dedicated operational testing, or as agreed. Once the OT&E Certification Official certifies system readiness, the system is ready to enter dedicated operational testing.

6.6.3. Considerations for Early Deployment of Prototypes. Use the applicable certification templates in AFMAN 63-119 to review the system's capabilities and limitations prior to early deployment of prototypes and ACTD/JCTDs.

6.7. Plans and Briefings for Operational Testing. DOT&E requires operational testers to submit written plans and present briefings as discussed below for programs on OSD OT&E Oversight. The information requirements below apply in full to AFOTEC and MAJCOMs unless DOT&E relief is documented. See **Attachment 2** for a summary.

6.7.1. Operational Test Concept Briefings. According to DODI 5000.2, DOT&E requires a "test concept" briefing a minimum of 120 days before the start of dedicated operational tests for programs on OSD OT&E Oversight. HQ USAF/TEP will arrange for corporate Air Force-level re-

views of test concept briefings. Operator and developer representatives are required to attend these briefings. A pre-brief to the Air Staff is required before going to DOT&E and should be coordinated through HQ USAF/TEP. For multi-Service programs, the other Services must be briefed. DOT&E may elect to defer this requirement and accept a later briefing of the final operational test plan as described in paragraph **6.7.2** in lieu of the test concept briefing. Operational test concept briefings for OAs should be presented a minimum of 30 days before test start for programs on OSD T&E Oversight. No briefings are required for non-Oversight programs.

6.7.2. Operational Test Plans and Test Plan Briefings. An operational test plan is due to DOT&E a minimum of 60 days prior to test start. DOT&E may request, or the operational test organization may elect, to present a briefing to accompany the final test plan. This briefing will be coordinated the same way as an operational test concept briefing.

6.7.3. Briefing Guidance. To conserve resources, video teleconference (VTC) is the preferred method for presenting briefings in the Washington DC area. Briefings to senior OSD leadership for high-interest programs or sensitive issues may be done in person, but advance briefings at intermediate levels should be delivered via VTC. All briefings must be scheduled through the appropriate HQ USAF/TE action officer, and completed as expeditiously and efficiently as possible.

6.8. DOT&E Test Plan Approval. Operational testing for programs on OSD OT&E Oversight may not start active testing until DOT&E approves the adequacy of the test plan in writing. All information required for OSD T&E Oversight programs is summarized in **Attachment 2**. HQ USAF/TEP will assist with the review, coordination, and submission of this information. DOT&E approval is only required on the operational test portions of integrated test plans prior to the start of operational testing.

6.9. Management of T&E Data.

6.9.1. Joint Reliability and Maintainability Evaluation Team (JRMET). The PM will establish a JRMET (or similar TIPT) to assist in the collection, analysis, verification, and categorization of reliability, maintainability, and availability (RM&A) data. The JRMET may also review applicable DRs and recommend whether or not they should be closed. When scoring RM&A data, the PM or designated representative will chair the JRMET during DT&E; an operational test representative will chair during dedicated operational testing.

6.9.2. Test Data Scoring Board (TDSB). The TDSB is a government-only group that compiles, reviews, and scores all available data. The PM and the testers will establish a TDSB and jointly designate a chairperson. The operational test representative will chair during and immediately following dedicated operational testing. The TDSB should include representatives from the RTO, operational testers, PTOs, operating command(s), and other participating commands.

6.9.3. Timely Release of T&E Data. All test teams will release validated test data and factual information as soon as practical to other testers and stakeholders. This data may be preliminary and should be identified as such.

6.9.4. Disclosing Test Data to Foreign Nationals. To determine what test data or materials may be disclosed to foreign nationals, use AFPD 16-2, *Operations Support, Disclosure of Military Information to Foreign Governments and International Organizations,* and AFI 61-204, *Disseminating Scientific and Technical Information*. See paragraphs **7.10** and **7.11** about the release and protection of test information.

6.10. Deficiency Reports (DR). All testers are responsible for identifying deficiencies and enhancements and submitting DRs. Government testers must clearly distinguish between DRs for deficiencies versus "nice-to-have" enhancements going beyond the scope of the system's operational requirements. Government testers will use the government-run DR system described in Chapter 2 of TO 00-35D-54

and AFI 63-501, *Air Force Acquisition Quality Program*. See DR planning considerations in paragraph **5.17**. Test teams will determine the optimum time to begin formally submitting DRs. The contractor-based DR system may suffice for the early stages of development, but the government-based DR system must become the primary method of reporting and tracking DRs during government-conducted T&E.

6.10.1. Accurate Categorization of DRs. When submitting or screening DRs, testers must ensure the DR's severity is accurately represented by assigning the proper DR category as defined in TO 00-35D-54 and **Attachment 1** of this AFI. Further categorization of software DRs may be done using AFI 10-602, **Attachment 8**, **Table A8.1**.

6.10.2. DRs from DT&E. The ITT will periodically convene a Deficiency Review Board to prioritize all open DRs. The PM will convene a JRMET to review DRs related to RM&A. Prioritized DRs will be used in preparation for certification of readiness for dedicated operational testing. If the PM cannot correct or resolve all Category I or Category II, Priority 2A DRs before dedicated operational testing begins, or defers fixes for these DRs, operational testers and operators must assess the impacts. The PM and ITT must reach agreement prior to certification of readiness for operational testing and develop a plan for resolution and subsequent testing.

6.10.3. Operational Tester DR Responsibilities. Prior to the FRP decision review, operational testers and operators will complete a final prioritization of all open DRs for resolution and funding. The MAJCOM's priorities must be used for rank-ordering these DRs. The final priorities will be forwarded to the PM to help direct corrective actions and will be listed in the final report.

6.10.4. Tracking and Closing DRs. Not all open DRs may receive funding or be corrected after a system is accepted for operational use. The database of open DRs may provide the only documentation of unsatisfactory conditions or worthwhile system enhancements. At no time will the SPO unilaterally close or downgrade DRs without formal consultation with the originating test organization and/or MAJCOM project officer. MAJCOM project officers must continue to track open DRs until they are funded and corrected, or the MAJCOM concurs with closing them.

6.11. Integrated Testing During Sustainment and Follow-on Increments. Follow-on increments and modifications are tested and evaluated in basically the same way as the first increment. Operational test and evaluation is required for each increment of capability prior to release to the user. This testing will be structured according to the program acquisition strategy. The T&E activities described in this chapter are tailored and repeated during the Operations and Support phase. Planning for these T&E activities is also tailored and repeated as described in **Chapters 4** and **5**.

6.12. Disposing of Test Assets. Test assets (e.g., instrumentation and test articles) from canceled or completed tests will be catalogued and turned over to government T&E organizations or acquisition or sustainment programs, or refurbished and reassigned to owning MAJCOMs. Surplus or unusable items will be sent to the nearest Defense Reutilization Management Office.

***6.13. Early Fielding of Prototypes or Pre-Production Systems.** Warfighter operational needs may require rapid and/or early fielding of new capabilities. This may result in early operational use of prototypes, technology demonstration systems, test articles, or pre-production systems prior to the completion of required dedicated operational testing and formal production decisions. In these situations, the lead operational test organization (as determined in paragraph **4.6**) may opt to produce a Capabilities and Limitations (C&L) Report to inform the warfighter and fielding decision authorities. The C&L Report provides the most current operational test perspective on developmental system capabilities and limitations based on testing done to date,

***6.13.1.** C&L Reports will be based on existing, verifiable T&E data (contractor, developmental, and operational) derived from all available system development, ground, and flight test activities. All relevant data sources used to develop the report should be identified. Include a program description and a summary of the current phase of formal system testing. The report should identify observed system capabilities and limitations and describe any areas of untested or unknown capabilities. Suitability observations, interoperability considerations, and information assurance issues should also be included. The type and scope of planned, but not yet accomplished, testing should also be described. If time is available for a dedicated operational test event such as an OUE, then that alternative would obviate the need for a C&L Report. If an operational test event is in progress or recently completed, a status report or interim summary report may be more appropriate.

***6.13.2.** The goal is to help warfighters gain early knowledge of potential operational effectiveness and suitability of systems that have not yet completed dedicated operational testing. The C&L Report should not make specific recommendations concerning the system fielding decision.

***6.13.3.** C&L Reports will not drive new testing requirements for a system. Release of a C&L Report does not obviate the requirement for dedicated OT&E. Six months after publication of the C&L Report, the operational test organization should review program status to determine whether an updated C&L Report is necessary. See paragraph **7.5.6** for additional reporting information.

Chapter 7

TEST AND EVALUATION OVERSIGHT AND REPORTING

7.1. OSD T&E Oversight List. DOT&E and USD(AT&L)/DS jointly publish an annual list of acquisition and sustainment programs requiring OSD T&E Oversight and approval. All test organizations should forward recommended additions or deletions to the T&E Oversight List through HQ USAF/TEP to OSD. In addition, OSD places information technology programs with significant interoperability deficiencies and issues on an Interoperability Watch List where they may transition to the OSD T&E Oversight List. Contact HQ USAF/TEP for the most current list.

***7.2. General Reporting Policy.** Test reports must be timely, factual, concise, and tailored to the needs of decision makers. They should be delivered in time to support the designated milestone or decision review. All T&E plans will describe which kinds of reports are required, their contents, and when and to whom they are submitted. All test reports will contain evaluations of test results and conclusions. Additional findings, considerations, and recommendations are not required but may be included if deemed appropriate. All reports must be properly archived and retrievable for future use. Reporting requirements for programs on OSD T&E Oversight are summarized in **Attachment 2**. All days will be "calendar days" unless otherwise stated.

7.3. DT&E Reports. The types and frequency of DT&E reports will be tailored to meet decision makers' requirements as documented in the ITC and the TEMP. LFT&E reports must be submitted to DOT&E 45 days prior to the beyond-LRIP decision review. The PM will document requirements for contractor test reports in the CDRL. Formal briefings are generally not required.

7.4. DT&E Report Distribution. The ITT will develop a distribution list for all DT&E reports which shall include operational testers, PTOs, applicable MAJCOMs, and the Defense Technical Information Center (DTIC). DT&E reports are not releasable to non-government agencies without prior approval and coordination of the PM. Release of contractor test reports may be subject to restrictions in the contract. For OSD T&E Oversight programs, the PEM will send a copy through appropriate channels to USD(AT&L)/DS and DOT&E if required. The PM will coordinate distribution of Signals Intelligence and Communications Security final reports with the National Security Agency, and provide copies to the Air Force Intelligence, Surveillance, and Reconnaissance Agency, 102 Hall Blvd., Suite 234, San Antonio TX 78243.

7.5. Operational Test Reports.

7.5.1. Significant Test Event Reports. These reports briefly describe the results of significant test events during operational test activities. Operational testers will submit these reports to the PM, HQ USAF/TE, PEM, PEO, RTO, PTOs, operational MAJCOM, among others, within 24 hours of any significant test event as described in the test plan.

***7.5.2. Final Reports.** Final reports should normally be delivered not later than 30 days prior to the supported decision in order to provide adequate time for review. Delivery timelines may be tailored to accommodate accelerated test schedules for specific user needs if coordinated with the decision review authority. Reports must address each of the COIs, the system's operational effectiveness, suitability, additional information on operational capabilities, and include an assessment of operational mission impacts. These reports must strike the proper balance between system capabilities and limitations while taking into account how well the system performed mission essential tasks. When appropriate, a production or fielding recommendation may be included for IOT&E, QOT&E, FOT&E, OUE, and FDE final reports. All Category I DRs and the top 10 Cate-

gory II DRs will be listed. Detailed technical information should be published in separate data documents. Final report briefings will be provided to HQ USAF staff and OSD as requested.

7.5.3. Interim Summary Reports. If the final report cannot be ready in time to support the decision, the MDA may instead accept a written interim report or a formal briefing. In that event, HQ USAF/TE will help establish a new report due date. A separate written interim summary report is not required. Any additional data collected will be added to the interim report when available.

7.5.4. MOT&E Final Reports. The lead operational test organization will prepare a single MOT&E final report aggregating all OT&E information from the participating Services' inputs. Each participating Service has the option of preparing its own supplemental report as an attachment to the single MOT&E report. All significant differences between Service test results should be explained. This guidance also applies to testing with other DOD or Federal agencies. See the *Memorandum of Agreement on Multi-Service Operational Test and Evaluation (MOT&E).* **Note**: Final MOT&E reports are required 90 days after the last dedicated MOT&E event. Briefings will be provided to HQ USAF staff and OSD as requested.

***7.5.5. Reporting SOTR Results.** If the MAJCOM conducts an SOTR in lieu of dedicated operational testing, the reviewing operational test organization must document that decision. Each MAJCOM may develop its own SOTR report format as needed. All conclusions and related recommendations based on the SOTR will be formally documented. All data and data sources used to conduct the SOTR should be identified. See paragraph **2.6.12**.

***7.5.6. Capabilities and Limitations (C&L) Reports.** While not mandatory, the C&L Report is appropriate when a system or prototype is provided to units for training in preparation for fielding, or when the system is deployed directly to an operational unit. A C&L Report may also be appropriate to support MAJCOM and Joint Urgent Operational Need (JUON) requests, combat capability documents (CCD), or Warfighter Rapid Acquisition Program (WRAP) proposals. Paragraph **6.13** gives more details. To ensure maximum flexibility, C&L Reports have no prescribed format. The level of detail provided will vary depending on the amount of preexisting information available, the warfighter's need for technical information, and the amount of time and resources available to conduct additional testing before the fielding decision. The C&L Report should not make specific recommendations concerning the system fielding decision or release for training purposes. This report may be provided to DOT&E to support their requirement in Title 10 §2399 for an early report to Congress.

***7.6. Operational Test Report Distribution.** Operational testers will send reports to the program stakeholders and DTIC as determined by the ITT. For OSD OT&E Oversight programs, HQ USAF/TE will forward copies to DOT&E and USD(AT&L)/DS. A summary of operational test reporting requirements is in **Attachment 2**.

7.7. Electronic Warfare (EW) Programs. All EW programs on OSD T&E Oversight are required to annually report their progress in implementing the DOD T&E Process for EW Systems according to P.L. 103-160 §220(a). PMs and test organizations for these programs will provide T&E information to HQ USAF/TEP according to **Attachment 2**. HQ USAF/TEP will consolidate information in coordination with HQ USAF/A5RE before submitting to USD(AT&L)/DS.

7.8. Integrated Test Reports. Integrated developmental and operational test reports are written and distributed according to ITT direction and tailored to decision makers' needs. The goals and results of each embedded test should be visible yet fully integrated into a total picture of system capabilities and mission impacts.

7.9. "Briefing Trail." HQ USAF/TE will arrange for Air Force-level review(s) of test report briefings. The other Services will be invited for multi-Service programs. The PM must be prepared to ad-

dress technical questions, program issues, DT&E, and the resolution of deficiencies. Operators must be available to answer questions regarding operational requirements and mission impacts of fielding the system.

7.10. Control of Test Reports. The reporting requirements in this AFI are exempt from licensing according to AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections*.

7.11. Distributing and Safeguarding Test Information.

7.11.1. Within the DOD. Test organization commanders determine release authority for reports and information under their control. Classified test information cannot be released except as specified in DODD 5200.1, *DOD Information Security Program*, and associated documents.

7.11.2 Outside the DOD. Test directors do not have release authority for test information and communications outside DOD channels. Freedom of Information Act requests should be processed according to DOD Regulation 5400.7/Air Force Supplement. Test information released to Congress, the General Accounting Office, the DOD Inspector General, or similar agencies must follow guidance in AFI 90-401, *Air Force Relations With Congress*, and AFI 65-401, *Relations With the General Accounting Office*. The Information Branch of the Office of the Vice Chief of Staff of the Air Force (HQ USAF/CVAII) will release test information to foreign nationals.

7.12. Information Collection, Records, and Forms.

7.12.1. No information collections are created by this publication.

7.12.2. Program records created as a result of the processes prescribed in this publication are maintained according to AFMAN 37-123 (will convert to AFMAN 33-363) and disposed of according to the AFRIMS RDS located at **https://afrims.amc.af.mil/rds_series.cfm**.

7.12.3. Forms (Adopted and Prescribed).

7.12.3.1. Adopted Forms. AF Form 847, **Recommendation for Change of Publication.**

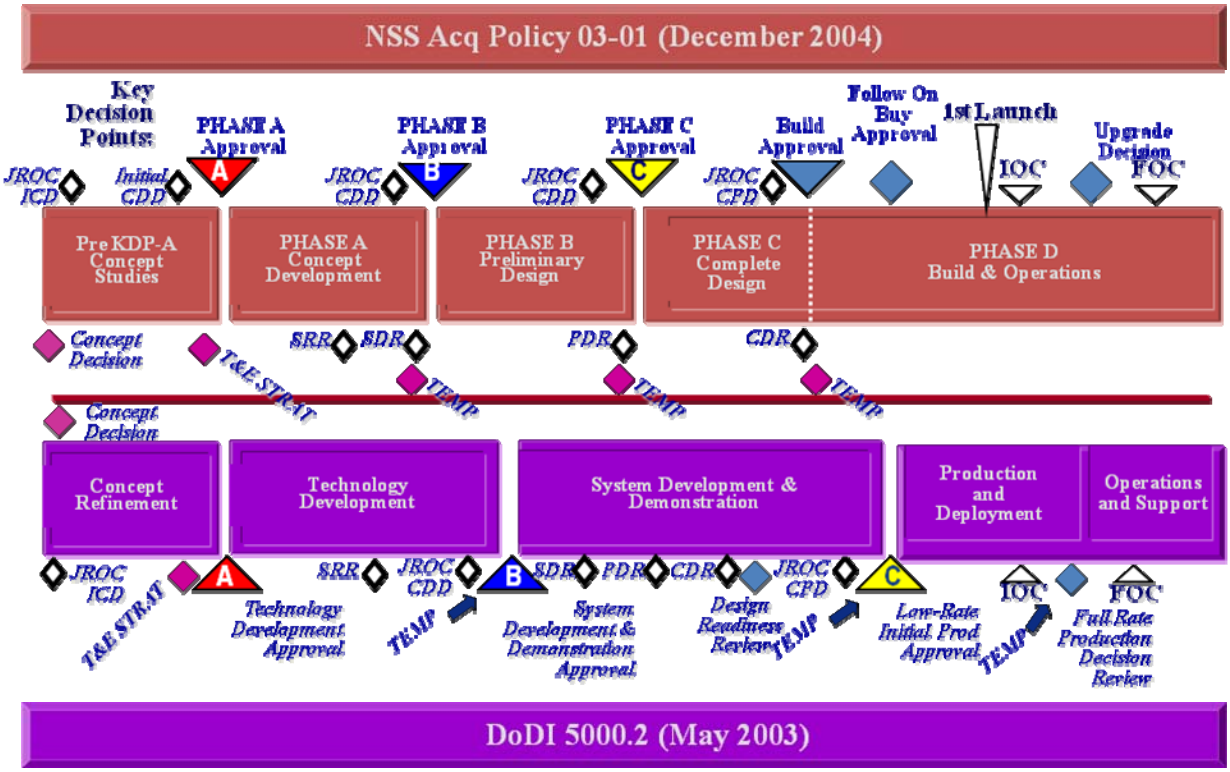
7.12.3.2. No forms are prescribed by this publication.

*Chapter 8

*SPACE SYSTEMS TEST AND EVALUATION

***8.1. Chapter Overview.** This chapter must be used in conjunction with the basic T&E policies in Chapters 1 through 7 of this AFI. This policy directs earlier timelines and additional actions that provide earlier influence of and better T&E support to space acquisition programs developed under *National Security Space (NSS) Acquisition Policy 03-01*. NSS 03-01 uses a streamlined acquisition framework with key decision points (KDP) that occur earlier than typical DOD 5000-series milestones and decision reviews. Operational testers must make risk-appropriate trades (e.g., configuration control, constrained environment) between operational realism and relevance to successfully implement this early influence approach. The NSS 03-01 acquisition model is "front loaded" with the key decisions on requirements, funding, and development. These decisions have historically been made without significant operational test input since contractors conducted the majority of space testing with little or no operational test community involvement until the system was on-orbit and functioning in its intended operational environment. The policy contained in this chapter establishes early operational influence, early operational test planning, and early operational assessments and test execution to help ensure decision makers can make fully-informed decisions with inputs from both the developmental and operational test communities. See **Figure 8.1** for a representation of the NSS 03-01 acquisition process compared to the DODI 5000.02 acquisition process. In accordance with NSS 03-01, Developmental and Operational Testing are members of the Independent Program Assessment Team which assesses all aspects of T&E planning and execution in preparation for the Defense Space Acquisition Board at program Key Decision Points.

***Figure 8.1, NSS 03-01 vs. DoDI 5000.2 Acquisition Process.**



***Note:** All acronyms in this figure are listed in **Attachment 1**. See **Figure 8.2** through **Figure 8.4** for additional details.

***8.1.1. Applicability.** This chapter applies to space system MDAPs and other space-related programs (Space System Type 1) under the oversight of SAF/US as defined and directed in *NSS 03-01*. See Table AP1-1 in NSS 03-01 for specific details. The NSS model emphasizes the information needs of decision makers for high-tech, "small quantity" NSS programs, versus the DOD 5000 model that is focused on "large quantity" production decisions. It differs from the traditional DODI 5000.02 framework due to different information requirements necessary to support investment and acquisition decision-making earlier in the life cycle of space systems and related equipment. The system's acquisition strategy must state which acquisition process will apply (i.e., DODI 5000.2 or NSS 03-01). This chapter applies principally to "small quantity" space systems, but may be used for selected other designated systems.

***8.1.2. Space Test and Evaluation Early Influence.** Space T&E will support the KDP decisions before contracts are signed and before "metal is bent" by providing early and continuous information and analysis about system progress in meeting the COIs and CTPs. Because satellite systems cannot be retrieved from their environment to fix deficiencies discovered after launch, some dedicated OT&E is required prior to launch. Requirements definition and acquisition planning, T&E planning, and appropriate test execution must be complete and thorough before space system launch.

***8.1.3. Integrated Testing for Space Systems.** Close integration of operational and developmental testing activities, to include contractor testing, should occur while the system is still in early development. The TEMP describes how all testing will be integrated, addressing the overall evaluation approach, key evaluation measures, and the major risks or limitations to completing the evaluations. The TEMP will also include the interfaces and interoperability with all other supporting/supported systems described in the system CONOPS and operational architectures. Operational testing will employ integrated test planning and execution while maintaining the independence of the evaluation and reporting processes.

***8.1.4. Contractor Support to Government Testing.** Developmental and operational testers should ensure contract documents contain the right kinds of support for government testing, to include, but not limited to M&S, instrumentation, technical support, documentation, transportation, various deliverables, other system segments (e.g., terminals, user equipment), engineering development models, and personnel support. See paragraphs **5.4** through **5.6** for additional details. The government will also ensure proper language is included in contracts to guarantee government access (DT and OT) to contractor T&E data while also maintaining a collaborative test environment with the contractor. Data requirements should be captured in contracting documents.

***8.2. Types of Space Test and Evaluation.** Space T&E uses the same types of T&E described in Chapter 2.

***8.2.1. Developmental Testing.** Space system developmental testing requires a great deal of collaboration between the government and the contractor. The government's role in contractor testing is to mitigate program risk by ensuring government oversight of contractor T&E planning, execution, and reporting. The government will actively track contractor progress in meeting contract requirements.

***8.2.1.1. RTO Responsibilities.** The RTO is the program's principal DT&E manager and subject matter expert, and serves as the DT&E agent in support of the systems engineering test and evaluation process, system integration and test, and transition to and certification of readiness for dedicated OT&E. An RTO is required for every ACAT I space program unless waived by the Space Program Executive Office (PEO). See paragraph **3.13** for additional RTO responsibilities.

***8.2.1.2. Working with Contractors.** Contractors are essential to the acquisition process, especially for space systems. With the advent of stronger integrated T&E policy, contractor and government testers should integrate their T&E efforts as much as possible through the ITT and other forums.

USD(AT&L)'s guidebook, *Integrating Test and Evaluation into Department of Defense Acquisition Contracts*, is designed to help industry and government T&E professionals, PMs, and contracting officers identify T&E items to consider when drafting the statement of objectives (SOO), SOW, and RFP. While not directive, this guidebook is essential to understanding how to obtain contractor support and make best use of their capabilities.

***8.2.2. Operational Testing.** Operational testing will evaluate as many of the operational test measures as possible prior to system launch; however, there will be some operational test requirements that cannot be evaluated until the system is launched (e.g., on-orbit with an operational ground system).

***8.2.2.1.** Testers will use EOAs and OAs to provide early insight into system progress toward operational effectiveness and suitability as well as progress toward readiness for eventual IOT&E. EOAs may inform KDP A and will typically inform KDP B. OAs will typically inform KDP C. EOAs and OAs will have content tailored to meet the decision maker's needs. Plans and reporting for EOAs and OAs will be documented in the TES/TEMP.

***8.2.2.2.** Testers will use operational utility evaluations (OUE) to evaluate mission capabilities prior to placing these capabilities in operational use. OUEs should be tailored to the needs of the specific decision being supported.

***8.2.3. T&E Resources.** The SOO, SOW, and RFP must identify the ground-based, operationally representative space T&E environments that will be secured to support developmental and operational testing. The ITT should work to identify and resolve any test infrastructure shortfalls as early as possible.

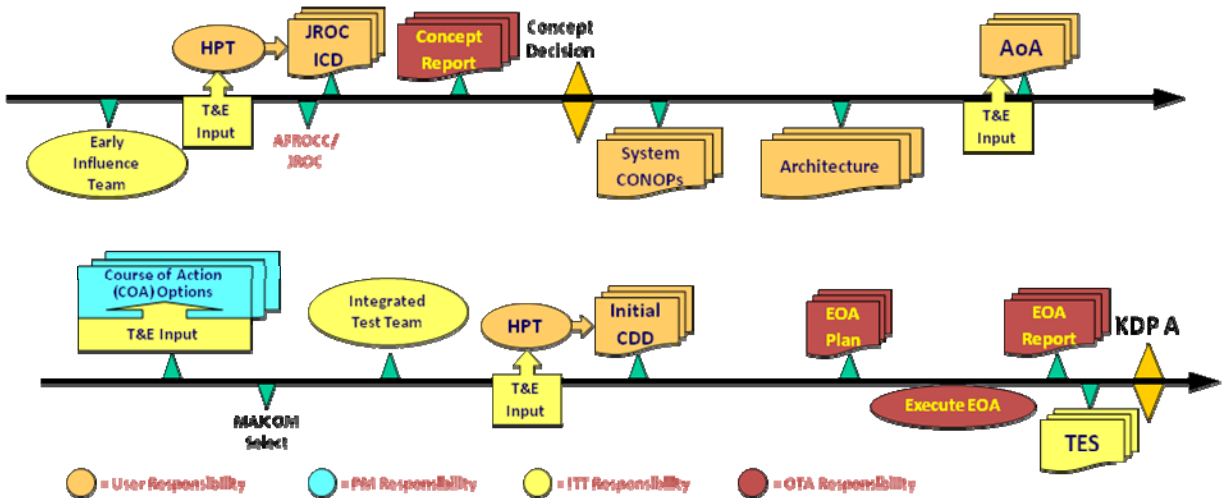
8.2.4. Status Reports. The test community will provide relevant, timely status reports to decision makers. Status reports identify and report technical maturation and performance and related impacts to test design, resources, infrastructure, and schedule. These reports may be integrated (one combined product from DT & OT) or non-integrated (separate DT or OT product), are event-driven, and are prepared as necessary after completion of significant program events as defined in the Initial Integrated Test Concept.

***8.3. Tester Involvement in JCIDS Process.** Developmental and operational testers will participate in HPTs that build all JCIDS documents. NSS 03-01 requires an ICD, an initial CDD (iCDD) to support KDP A, separate CDDs to support both KDP B and KDP C, and a CPD to support Build Approval as shown in Figure **8.1**. Refer to paragraphs **4.2** and **5.12** for information on tester involvement in developing JCIDS documentation. Additionally, any system CONOPS, threat documents, and architectures should be updated and considered during these JCIDS document reviews.

***8.4. Space T&E Activities Supporting KDP A.** See **Figure 8.2** for activities supporting KDP A.

***8.4.1. Early Tester Influence in Capability Requirements.** Space programs require early and continuous tester influence in describing capability gaps, formulating operational concepts, and assisting HPTs as JCIDS requirements are developed. Developmental and operational testers should begin by reviewing drafts of the Functional Area Analysis, Functional Needs Analysis, and Functional Solution Analysis. Tester feedback is required during the development and review of JCIDS documents prior to vetting through the AFROCC and JROC. **Figure 8.2** shows a notional flowchart for pre-KDP A early involvement activities. The Air Force T&E Guidebook describes tester inputs to the process. See paragraph **4.2** for basic requirements development direction.

***Figure 8.2, Space System Integrated Testing Flow Chart for KDP A (Notional).**



***8.4.2. Early Influence Team.** MAJCOM requirements leads and test directors will lead the early influence team (EIT) to identify an initial cadre of subject matter experts to review and influence early concepts, studies, JCIDS documents, etc., for new space systems. Potential participants are operational and developmental testers, the future product center, center test authority office, and requirements and CONOPS developers. The primary customer is the MAJCOM requirements authority. The EIT will draft an ITT charter and help stand up the ITT in order to review the CDD and prepare the TES prior to KDP A. The EIT will schedule periodic reviews of threat documents, CONOPS, DOD architecture frameworks, acquisition strategies, and technology development strategies. The EIT should write possible T&E measures, criteria, and scenarios for these documents to help quantify the T&E strategy. Developmental and operational testers should begin formulating meaningful and testable measures to support the options in the AoA and COA, and quantify rough estimates of T&E costs. The Air Force T&E Guidebook further describes the EIT's responsibilities.

***8.4.3. Integrated Test Team (ITT) Formation.** The ITT should be formed and the RTO, PTOs, and other key members designated immediately after the preferred COA is chosen in order to influence CDD and TES development. See paragraphs **1.4** and **4.4** for basic information about ITTs. The ITT will ensure early collaboration among all program stakeholders to ensure space systems start on sound footing and testing delivers correct and timely information and analysis to decision makers. Early and continuous government tester influence can be achieved when an actively-managed ITT plans for and directs the additional early activities described below.

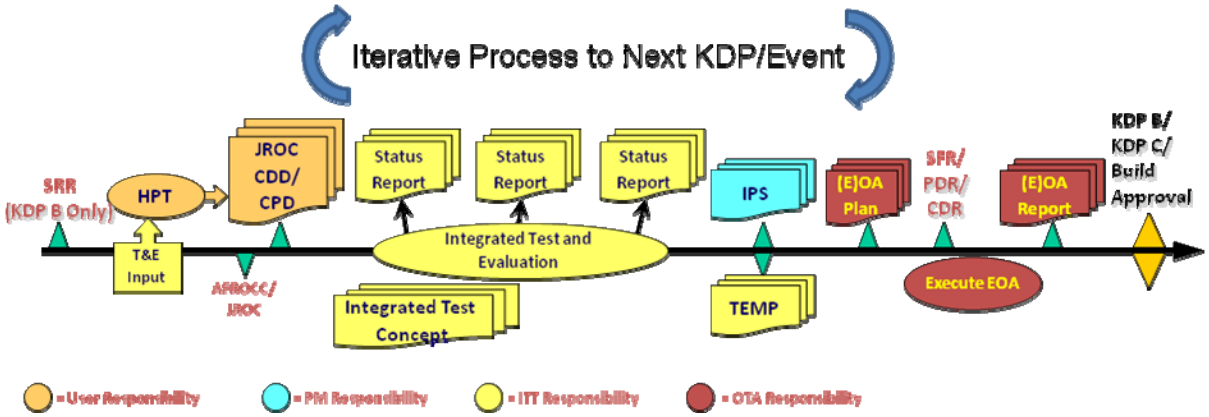
***8.4.4. Development of the T&E Strategy (TES).** The ITT will develop a TES to support KDP A. When determining the developmental and operational test organizations, follow the policy in paragraphs **4.5** and **4.6**. See paragraph **4.11** for information on TES development. ITT members will review the draft SOO, SOW, and RFP when available to ensure that contractors will be providing the proper support to government testers as described in paragraphs **5.4** to **5.6**. The TES is critical to establishing the framework for a thorough T&E program designed to provide information for fact-based acquisition and operational decision-making.

***8.4.5. Early Operational Assessment (EOA) Support to KDP A.** The operational test organization may plan and conduct an independent EOA to support the KDP A decision. See paragraph **8.2.2.1**. for more information on EOAs and OAs.

***8.5. Space T&E Activities Supporting KDP B.** See **Figure 8.3** for activities supporting KDP B. Figure **8.3** is an iterative figure. Most of the activities performed prior to KDP B are refined and re-

peated as system development activities proceed to KDP C and subsequently to Build Approval. Specific information on the activities for KDP C and Build Approval are discussed in paragraph **8.6**.

***Figure 8.3, Space System Integrated Testing Flow Chart for KDPs B, C, and Build Approval (Notional).**



***8.5.1. Developmental Testing Support to KDP B.** The contractor usually does the majority of space system developmental testing. Contractor and government testers will work collaboratively as stipulated in the contracts and the TES or TEMP.

***8.5.2. Integrated T&E Assessments and Reporting**. As the concept and program mature, integrated testing activities will support the acquisition program reviews (e.g., SRR and SDR). The ITT should generate integrated status reports as necessary prior to decision points that address technology and system maturation, to include early prototypes, at all levels of testing. Status reports provide information to the development and acquisition communities as the technology and system design mature at event-driven points, including prototype testing or other risk-reduction testing activities. Participation in formal design reviews, e.g., SRR, SDR, preliminary design review (PDR), and critical design review (CDR), combined with any testing conducted within the phase, forms the basis of EOA and OA reports generated to inform KDPs. EOA and OA plans and reporting will be documented in the TES/TEMP.

***8.5.3. Integrated Test Concept (ITC) and TEMP Development.** The ITT will develop an ITC at the earliest opportunity following KDP A in preparation for KDP B but not later than the development of the SEP. It is a working document that complements the TES or TEMP and is a required deliverable. The ITC promotes the combining of developmental and operational testing so that all test objectives are satisfied. The ITC also serves as the guiding document for development of detailed test plans, bridging the gap between a TEMP and individual detailed test plans by capturing information such as a description of test scenarios, test locations, exercises, T&E methodologies, operational issues, and projections of future capabilities. The ITT will use a systems engineering approach to identify and integrate the COIs, CTPs, test objectives, MOEs, MOSs, resources, and schedules as known. The ITT will develop the ITC and TEMP and link them to the SEP, which is developed by the program office, reviewed annually, and updated prior to each KDP. The ITT will review the ITC and TEMP annually and update them prior to any KDP. All test members of the ITT will coordinate on the ITC.

***8.5.4. Early Operational Assessment Support to KDP B.** The operational test organization will plan and conduct independent EOAs prior to KDP B as shown in **Figure 8.3**. See paragraph **8.2.2.1**. EOA plans and reporting will be documented in the TES/TEMP.

***8.6. Space T&E Activities Supporting KDP C and Build Approval.** See **Figure 8.3** for activities relating to these decision points.

***8.6.1. Developmental Test Support to KDP C and Build Approval.** The developmental test organization (typically a contractor for space programs) is responsible to the program office for conducting DT&E and delivering DT&E reports and T&E data to the government throughout these phases according to the contract. The PM, with the assistance of the RTO and relevant ITT members, will help ensure timely availability of this information to keep the development program on schedule, to facilitate government oversight, and to inform decision makers prior to all major decisions. The PM will use the developmental test organization's test readiness reviews and post-test outbriefs to inject and enforce entrance and exit criteria. Government personnel will evaluate the developmental test organization's results to ensure contract compliance and check development progress.

***8.6.2. Integrated Testing.** The ITT will direct development of test plans that are integrated (see paragraph **6.3**) in preparation for KDP C and update these plans prior to Build Approval. All individual contractor and government test plan activities will be integrated into an interlocking integrated series or matrix of tests and evaluations focused on the current increment, with follow-on test increments described in lesser detail. The ITC will be the overall plan for integrated test planning efforts beyond the information contained in the TEMP. These plans must be linked to the SEP, TEMP, and Integrated Program Summary (IPS) and should address the areas discussed in paragraphs **5.13** and **5.14**.

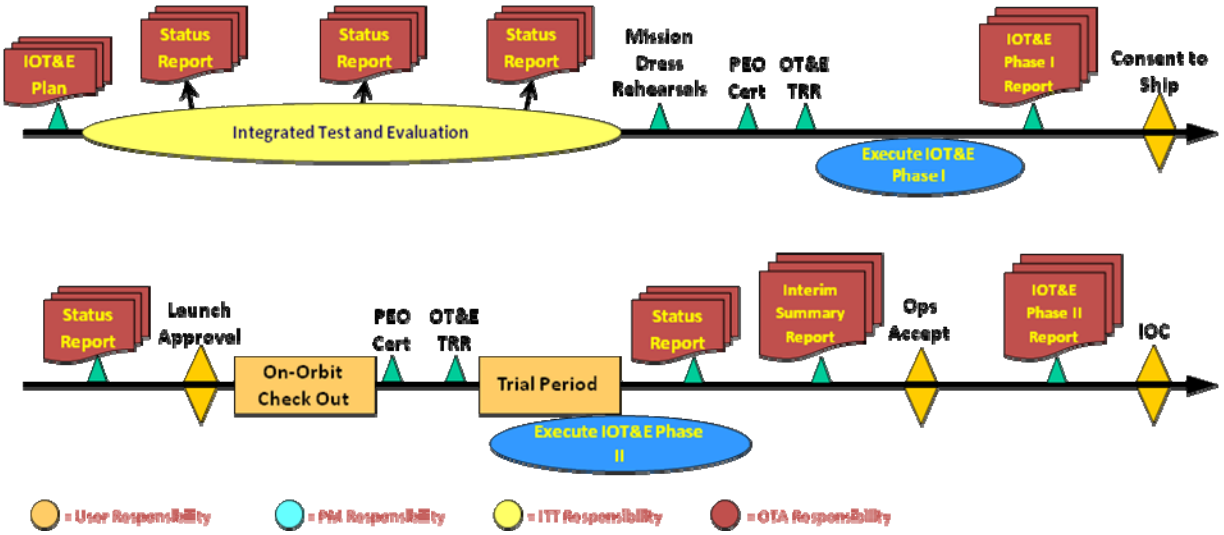
***8.6.3. Integrated T&E Assessments and Reporting**. As the system design matures, integrated testing activities will support acquisition program reviews (e.g., PDR and CDR). Based on the contractor's DT&E reports, supporting documentation, and the assessments by government developmental and operational testers, the ITT and/or T&E organizations may produce status reports as needed prior to KDP C and Build Approval. These reports will address technology and system design maturation, to include integrated test conducted on prototypes and actual system hardware. PMs will factor these results into future program plans and updates to the IPS, SEP, and TEMP.

***8.7. Space T&E Activities Supporting Decisions Up Through IOC.** The following activities support decisions up through declaration of IOC and include Consent to Ship, Launch Approval, and operational acceptance.

***8.7.1. Integrated T&E Support to Consent to Ship and Launch Approval Decisions. Figure 8.4** shows the buildup to the Consent to Ship and Launch Approval decisions. Throughout the system development, integrated T&E will be conducted and feedback provided to the development and acquisition communities through event-driven status reports. In preparation for the Consent to Ship decision, the PEO will certify the system ready to enter dedicated OT&E Phase I. Integrated testing will continue after the Consent to Ship decision and will generate a status report to inform the Launch Approval decision.

*After launch, integrated testing will continue and conclude with a PEO certification that the system is ready to enter dedicated OT&E Phase II (if required). Final dedicated OT&E will be conducted in parallel with the operational trial period to accelerate the system's operational use by the warfighter. Status reports, interim summary reports, and the final IOT&E report will be generated to inform the post-launch program decisions such as operational acceptance, STRATCOM/J65 certification, and IOC.

***Figure 8.4, Space System Integrated Testing Flow Chart for Consent to Ship and Operational Decisions (Notional).**



***8.7.2. Certification of Readiness for Dedicated Operational Testing.** A certification of readiness for entry into dedicated operational testing will be completed prior to starting the dedicated OT&E described in paragraphs **8.7.1** and **8.7.3**. Refer to paragraph **6.6** and AFMAN 63-119 for detailed information on certification of readiness.

***8.7.3. Dedicated Operational Test and Evaluation.** Dedicated OT&E for space systems may use a multi-phased approach (i.e. Phases 1 and 2) depending on the acquisition strategy. A dedicated phase will support the Consent to Ship decision prior to launch. Another phase will support the operational decisions (e.g. IOC, STRATCOM/J65 certification) after launch, and will make use of data obtained during the system's trial period. During these phases of dedicated OT&E, status reports will be produced to support various decisions (e.g., launch approval). An interim summary report (see paragraph **7.5.3**) will be used to support operational decisions.

***8.7.4. Space T&E Activities After IOC.** Additional developmental and operational test activities may be required to support continued acquisition and sustainment (e.g., system modifications) and operational decisions (e.g., ops acceptance) throughout system sustainment and disposal. The ITT will continue to function throughout the life cycle of the system and will ensure the TEMP and other supporting T&E documentation address both pre- and post-IOC T&E activities. The ITT structure and composition will evolve as required to best support pre- and post-IOC T&E efforts and facilitate transition to follow-on, regression, and sustainment testing. Post-IOC T&E activities may occur in the sustainment phase of the system's lifecycle or may result from a reentry into the acquisition process for follow-on increments. See paragraph **4.6.** for more discussion of OT organization determination.

JOHN T. MANCLARK
Director, Test and Evaluation

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

Title 10, United States Code, *Armed Forces,* §139, §2366, §2399, §2400, §2350a(g)

P.L. 103-160 §220, *National Defense Authorization Act for Fiscal Year 1994*

Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*

CJCSI 3170.01, *Joint Capabilities Integration and Development System*

CJCSM 3170.01, *Operation of the Joint Capabilities Integration and Development System*

CJCSI 6212.01, *Interoperability and Supportability of Information Technology and National Security Systems*

DODD 3200.11, *Major Range and Test Facility Base (MRTFB)*

DODD 3216.2, *Protection of Human Subjects and Adherence to Ethical Standards in DOD-Supported Research*

DODD O-3600.3, *Technical Assurance Standard for Computer Network Attack (CNA) Capabilities*

DoDI 4630.8, *Procedures for Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)*

DODD 5000.1, *The Defense Acquisition System*

DODI 5000.2, *Operation of the Defense Acquisition System*

DODI S-3100.15, *Space Control*

DODI 5010.41, *Joint Test and Evaluation (JT&E) Program*

DODD 5141.2, *Director of Operational Test and Evaluation (DOT&E)*

DODD 5200.1, *DOD Information Security Program*

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DODD 8500.1, *Information Assurance*

DODI 8500.2, *Information Assurance (IA) Implementation*

DODI 8510.01, *DOD Information Assurance Certification and Accreditation Process (DIACAP)*

NSS 03-01, *National Security Space (NSS) Acquisition Policy*

AFDD 1-2, *Air Force Glossary*

HAF MD 1-52, *Director of Test and Evaluation*

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*AFPD 10-9, *Lead Command Designation and Responsibilities for Weapon Systems*

AFPD 10-23, *Air Force Innovation Program*

*AFPD 10-28, *Air Force Concept Development*

AFI 10-230, *Conduct of Key Exercises and Experiments*

AFI 10-400, *Aerospace Expeditionary Force Planning*

AFI 10-601, *Capabilities-Based Requirements Development*

AFI 10-602, *Determining Mission Capability and Supportability Requirements*

AFI 10-1202, *Space Test Program (STP) Management*

AFI 11-260, *Tactics Development Program*

AFI 13-212, Vol I, *Range Planning and Operations*

AFI 14-206, *Modeling and Simulation*

AFPD 16-2, *Operations Support, Disclosure of Military Information to Foreign Governments and International Organizations*

AFI 16-301, *U.S. Air Force Priority System for Resources Management*

AFI 16-1001, *Verification, Validation and Accreditation (VV&A)*

AFI 16-1002, *Modeling and Simulation (M&S) Support to Acquisition*

AFI 32-7061, *The Environmental Impact Analysis Process*

AFI 33-202, Vol I, *Network and Computer Security*

AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections*

AFI 33-401, *Implementing Air Force Architectures*

AFMAN 37-123, *Management of Records* (will become AFMAN 33-363)

AFI 61-204, *Disseminating Scientific and Technical Information*

AFPD 63-5, *Quality Assurance*

AFI 63-101, *Operations of Capabilities Based Acquisition System*

AFI 63-103, *Nuclear Weapons Program Management*, (being republished as *Joint Air Force-National Nuclear Security Administration (AF-NNSA) Nuclear Weapons Acquisition*

AFI 63-104, *The SEEK EAGLE Program*

AFI 63-107, *Integrated Product Support Planning and Assessment*

AFMAN 63-119, *Certification of System Readiness for Dedicated Operational Test and Evaluation*

AFI 63-125, *Nuclear Certification Program*

*AFPAM 63-128, *Guide to Acquisition and Sustainment Life Cycle Management* (when published)

AFI 63-501, *Air Force Acquisition Quality Program*

AFI 63-1101, *Modification Management*

AFI 63-1201, *Life Cycle Systems Engineering*

AFI 65-401, *Relations With the General Accounting Office*

AFI 65-601, Vol 1, *Budget Guidance and Procedures*

AFI 90-401, *Air Force Relations With Congress*

AFI 91-202, *The US Air Force Mishap Prevention Program*

AFI 91-204, *Safety Investigations and Reports*

AFI 91-205, *Nonnuclear Munitions Safety Board*

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection and Health (AFOSH) Program*

AFPD 99-1, *Test and Evaluation Process*

AFI 99-106, *Joint Test and Evaluation Program*

AFI 99-108, *Programming and Reporting Missile and Target Expenditures in Test and Evaluation*

AFI 99-109, *Major Range and Test Facility Base (MRTFB) Test and Evaluation Resource Planning*

AFI 99-114, *Foreign Materiel Program (S)*

AFI 99-120, *Forecasting and Programming Munitions Telemetry and Flight Termination Systems*

TO 00-35D-54, *USAF Deficiency Reporting and Investigating System*

TO 00-5-1, *Air Force Technical Order System*

SD-2, *Buying Commercial & Nondevelopmental Items: A Handbook,* Apr 1996

The Foreign Comparative Testing (FCT) Handbook

Memorandum of Agreement on Multi-Service Operational Test and Evaluation (MOT&E) and Operational Suitability and Definitions

Defense Acquisition Guidebook

**Incorporating Test and Evaluation into Department of Defense Acquisition Contracts*

International Armament Cooperation Handbook

Test and Evaluation Management Guide, Defense Acquisition University Press, 5th edition

Glossary, Defense Acquisition Acronyms and Terms

DOD Guide for Achieving Reliability, Availability, and Maintainability

**Air Force Test and Evaluation Guidebook*

AFOTEC OT&E Guide

IT Lean Guidebook

Testing in a Joint Environment Roadmap, Nov 12, 2004

Guidelines for Conducting Operational Test and Evaluation for Software-Intensive System Increments, OSD/DOT&E, June 16, 2003

**Procedures for operational Test and Evaluation of Information Assurance in Acquisition Programs,* OSD/DOT&E, January 21, 2009

**United States Air Force Warfare Center (USAFWC) Charter*

Abbreviations and Acronyms

ACAT—Acquisition Category

ACTD—Advanced Concept Technology Demonstration

ADM—Acquisition Decision Memorandum

AFAMS—Air Force Agency for Modeling and Simulation

AFCA—Air Force Communications Agency

AFCD—Air Force Capabilities Document

AFC2ISRC—Air Force Command and Control & Intelligence, Surveillance, and Reconnaissance Center (disestablished)

AFDD—Air Force Doctrine Document

AFI—Air Force Instruction

AFIWC—Air Force Information Warfare Center (disestablished)

AFMAN—Air Force Manual

AFMC—Air Force Materiel Command

AFMD—Air Force Mission Directive

AFMSRR—Air Force Modeling and Simulation Resource Repository

AFOSH—Air Force Occupational and Environmental Safety, Fire Protection and Health

AFOTEC—Air Force Operational Test and Evaluation Center

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFRIMS RDS—Air Force Information Management System Records Disposition Schedule, https://afrims.amc.af.mil/rds_series.cfm

AFROCC—Air Force Requirements for Operational Capabilities Council

AFSPC—Air Force Space Command

ALC—Air Logistics Center

Ao—Availability

AoA—Analysis of Alternatives

APDP—Acquisition Professional Development Program

APML—Acquisition Program Master List

ATD—Advanced Technology Demonstration

ATEC—Army Test and Evaluation Command

CCD—Combat Capability Document

***C&L—**Capabilities and Limitations

***CDD—**Capability Development Document

***CDR—**Critical Design Review

CDRL—Contract Data Requirements List

CJCSI—Chairman of the Joint Chiefs of Staff Instruction

CJCSM— Chairman of the Joint Chiefs of Staff Manual

CNA—Computer Network Attack

COA—Course of Action

COI—Critical Operational Issue

***CONOPS—**Concept of Operations

CoP—Community of Practice

COTS—Commercial-Off-The-Shelf

CPD—Capability Production Document

CSAF—Chief of Staff of the Air Force

CTF—Combined Test Force

CTP—Critical Technical Parameter

DAB—Defense Acquisition Board

DAU—Defense Acquisition University

DOD—Department of Defense

DODD—Department of Defense Directive

DODI—Department of Defense Instruction

OT&E—Director, Operational Test and Evaluation

DR—Deficiency Report or Deficiency Reporting

DRR—Design Readiness Review

DRU—Direct Reporting Unit

DSM—Digital System Model

***DT—**Developmental Testing

DTIC—Defense Technical Information Center

DT&E—Developmental Test and Evaluation

EA—Evolutionary Acquisition

e.g.—for example

EIT—Early Influence Team

EMA—Expectation Management Agreement

***EMD—**Engineering and Manufacturing Development

EOA—Early Operational Assessment

et. seq.—and all that follows

EW—Electronic Warfare

FAT—First Article Test

FCT—Foreign Comparative Testing

FDE—Force Development Evaluation

FOA—Field Operating Agency

FOT&E—Follow-on Operational Test and Evaluation

FRP—Full-Rate Production

FSA—Functional Solution Analysis

GFE—Government Furnished Equipment

HAF MD—Headquarters Air Force Mission Directive

HPT—High Performance Team

***HSI—**Human Systems Integration

HQ—Headquarters

IA—Information Assurance

ICBM—Intercontinental Ballistic Missile

***iCDD—initial Capabilities Development Document**

ICD—Initial Capabilities Document

i.e.—that is

IITD—Initial Integrated Test Design

IOT&E—Initial Operational Test and Evaluation

IPS—Integrated Program Summary

ISP—Information Support Plan

IT—Information Technology

ITC—Integrated Test Concept

ITT—Integrated Test Team

JCD—Joint Capabilities Document

JCTD—Joint Concept Technology Demonstration

JITC—Joint Interoperability Test Command

JP—Joint Publication

JRMET—Joint Reliability and Maintainability Evaluation Team

JROC—Joint Requirements Oversight Council

***JUON—**Joint Urgent Operational Need

JT&E—Joint Test and Evaluation

KDP—Key Decision Point

KIP—Key Interface Profile

LAT—Lot Acceptance Test

LCMP—Life Cycle Management Plan

LFT&E—Live Fire Test and Evaluation

LRIP—Low-Rate Initial Production

M&S—Modeling and Simulation

MAJCOM—Major Command

MCOTEA—Marine Corps Operational Test and Evaluation Agency

MDA—Milestone Decision Authority

MDAP—Major Defense Acquisition Program

MOA—Memorandum of Agreement

MOE—Measure of Effectiveness

MOP—Measure of Performance

MOS—Measure of Suitability

MOT&E—Multi-Service Operational Test and Evaluation

MRTFB—Major Range and Test Facility Base

MS—Milestone

MUA—Military Utility Assessment

NDI—Non-Developmental Item

NNMSB—Nonnuclear Munitions Safety Board

NSS—National Security System *or* National Security Space

OA—Operational Assessment

OCR—Office of Collateral Responsibility

***OFP—**Operational Flight Program

OPR—Office of Primary Responsibility

OPTEVFOR—Operational Test and Evaluation Force

OSD—Office of the Secretary of Defense

***OT—**Operational Testing

OT&E—Operational Test and Evaluation

OTA—Operational Test Agency

OUE—Operational Utility Evaluation

PAT&E—Production Acceptance Test and Evaluation

***PDR—**Preliminary Design Review

PEM—Program Element Monitor

PEO—Program Executive Officer

P.L.—Public Law

PM—Program Manager

PMD—Program Management Directive

POC—Point of Contact

POM—Program Objective Memorandum

PPQT—Pre-Production Qualification Test

PQT—Production Qualification Test

PTO—Participating Test Organization

QOT&E—Qualification Operational Test and Evaluation

QT&E—Qualification Test and Evaluation

R&D—Research and Development

RDT&E—Research, Development, Test, and Evaluation

RFP—Request for Proposal

RM&A—Reliability, Maintainability, and Availability

RTO—Responsible Test Organization

SAMP—Single Acquisition Management Plan

SDD—System Development and Demonstration

***SDR—**System Design Review

SECDEF—Secretary of Defense

SAE—Service Acquisition Executive

***SEP—**Systems Engineering Plan

SF—Standard Form

SISSU—Security, Interoperability, Supportability, Sustainability, and Usability

***SOO—**Statement of Objectives

***SOTR—**Sufficiency of Operational Test Review

SOW—Statement of Work

SPML—Sustainment Program Master List

SPO—System Program Office

SRB—Safety Review Board

***SRR—**System Requirements Review

***TD—**Technical Director

T&E—Test and Evaluation

TES—Test and Evaluation Strategy

TD&E—Tactics Development and Evaluation

TDS—Technology Development Strategy

TDSB—Test Data Scoring Board

TEMP—Test and Evaluation Master Plan

TIPT—Test Integrated Product Team

TO—Technical Order

TPWG—Test Planning Working Group (discontinued)

TRB—Technical Review Board

TRP—Test Resource Plan

TTP—Tactics, Techniques, and Procedures

USAF—United States Air Force

***USAFWC—**United States Air Force Warfare Center

VV&A—Verification, Validation, and Accreditation

VTC—Video Teleconference

***WRAP—**Warfighter Rapid Acquisition Program

WSEP—Weapon System Evaluation Program

www—World Wide Web

Terms

Note*:* See AFI 10-601 and AFI 63-101 for definitions of terms relating to the requirements and acquisition processes.

Note*:* A common understanding of terms is essential to effectively implement this instruction. In some cases, definitions from multiple sources are offered where they may be of value. Italicized words and notes in brackets are not part of the formal definition and are offered only for clarity.

Note*:* For additional terms and definitions not listed below, see Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, and Air Force Doctrine Document (AFDD) 1-2, *Air Force Glossary*, which contain standardized terms and definitions for DOD and Air Force use. An unofficial source is the *Test and Evaluation Management Guide*, 5th edition, Defense Acquisition University (DAU) Press.

Acquisition Category (ACAT)—Acquisition categories determine the level of review, decision authority, and applicable T&E policies and procedures. They facilitate decentralized decision making and execution, and compliance with statutorily imposed requirements. (See DODI 5000.2, Enclosure 2 for details.)

Advanced Concept Technology Demonstration— A demonstration of the military utility of a significant new technology and an assessment to clearly establish operational utility and system integrity. (CJCSI 3170.01)

Availability (Ao)—A measure of the degree to which an item is in the operable and committable state at the start of a mission when the mission is called for at an unknown (random) time. (*Defense Acquisition Guidebook*)

***Capabilities and Limitations (C&L) Report.** An optional, quick-look report of limited scope that operational testers provide to operational units to support rapid and/or early fielding of developing capabilities before dedicated operational testing is complete and formal production begins. It provides the most current operational test perspectives on system capabilities and limitations based on testing done to date, and describes any untested or unknown areas.

Capability-Based Testing—A mission-focused methodology of verifying that a capabilities solution will enable operations at an acceptable level of risk. Capabilities-oriented evaluations are emphasized throughout system testing in addition to traditional evaluations of system performance measured against specification-like requirements. It requires understanding operational concepts and involves developing T&E strategies and plans to determine whether a capability solution option merits fielding.

Combined Testing—See Integrated Testing.

Covered System—1. A vehicle, weapon platform, or conventional weapon system that includes features designed to provide some degree of protection to users in combat; and this is a major system within the meaning of that term in Title 10 §2302(5). (Title 10 §2366). **2.** All categories of systems or programs identified in Title 10 §2366 as requiring live fire test and evaluation. In addition, non-traditional systems or programs that do not have acquisition points referenced in Title 10 §2366, but otherwise meet the statutory criteria. **Note:** The definitions of "covered system," "major munitions program," and "covered product improvement program" are encompassed in the single DOD term "covered system." (*Defense Acquisition Guidebook* which includes conventional munitions programs for which more than 1,000,000 rounds are planned to be acquired; or a modification to a covered system that is likely to affect significantly the survivability or lethality of such a system.)

Covered Product Improvement Program—See Covered System.

Critical Operational Issue (COI)—1. Operational effectiveness and operational suitability issues (not parameters, objectives, or thresholds) that must be examined during operational testing to determine the system's capability to perform its mission. (paraphrased from DAU's *Test and Evaluation Management Guide)* **2.** A key question to be answered by operational testers when evaluating a system's overall operational effectiveness, suitability, and operational capabilities.

Critical Technical Parameter (CTP)—Measurable critical system characteristics that, when achieved, allow the attainment of operational performance requirements. They are technical measures derived from operator requirements. Failure to achieve a critical technical parameter should be considered a reliable indicator that the system is behind in the planned development schedule or will likely not achieve an operational requirement. (paraphrased from *Defense Acquisition Guidebook***)**

Dedicated Operational Testing—Operational test and evaluation that is conducted independently from contractors, developers, and operational commands and used to support production or fielding decisions.

Deficiency Report (DR)—The generic term used within the USAF to record, submit, and transmit deficiency data which may include, but is not limited to, a Deficiency Report involving quality, materiel, software, warranty, or informational deficiency data submitted using the SF 368 or equivalent format. (TO 00-35D-54)

Category I Deficiency—Those which may cause death, severe injury, or severe occupational illness; may cause loss or major damage to a weapon system; critically restricts the combat readiness capabilities of the using organization; or which would result in a production line stoppage.

Category II Deficiency—Those that impede or constrain successful mission accomplishment (system does not meet minimum operational requirements but does not meet the safety or mission impact criteria of a Category I deficiency). It may also be a condition that complements, but is not absolutely required for, successful mission accomplishment. The recommended enhancement, if incorporated, will improve a system's operational effectiveness or suitability.

Enhancement—A condition that improves or complements successful mission accomplishment but is not absolutely required. The recommendation, if incorporated, will enhance a system's oper-

ational safety, suitability and/or effectiveness. An enhancement report should not be designated as such solely due to an "out-of-scope" condition as described in contractual requirements.

Deployment—1. The movement of forces within operational areas. **2.** The relocation of forces and materiel to desired operational areas. Deployment encompasses all activities from origin or home station through destination. (JP 1-02)

Developmental Test and Evaluation (DT&E)—Test and evaluation conducted to evaluate design approaches, validate analytical models, quantify contract technical performance and manufacturing quality, measure progress in system engineering design and development, minimize design risks, predict integrated system operational performance (effectiveness and suitability) in the intended environment, and identify system problems (or deficiencies) to allow for early and timely resolution. DT&E includes contractor testing and is conducted over the life of the system to support acquisition and sustainment efforts. (*Defense Acquisition Guidebook*)

***Early Influence Team—**An initial cadre of subject matter experts that precedes the Integrated Test Team (ITT). The EIT advises on, reviews, and influences the development of very early documentation for emerging space programs and helps stand up the ITT.

Early Operational Assessment (EOA)—An operational assessment (OA) conducted before MS B. An EOA assesses the design approach sufficiently early in the acquisition process to assure it has the potential to fulfill operator requirements. (See Operational Assessment.)

Evaluation Criteria—Standards by which the accomplishment of required technical and operational effectiveness and/or suitability characteristics, or resolution of operational issues, may be addressed. (*Defense Acquisition Guidebook*)

Evolutionary Acquisition—Evolutionary acquisition is the preferred DOD strategy for rapid acquisition of mature technology for the user. An evolutionary approach delivers capability in increments, recognizing, up front, the need for future capability improvements. The objective is to balance needs and available capability with resources, and to put capability into the hands of the user quickly. The success of the strategy depends on consistent and continuous definition of requirements, and the maturation of technologies that lead to disciplined development and production of systems that provide increasing capability towards a materiel concept. The approaches to achieve evolutionary acquisition require close collaboration between the user, tester, and developer. (DODI 5000.2)

***Fielding—**The decision to acquire and/or release a system to operators in the field.

First Article Test (FAT)—Production testing that is planned, conducted, and monitored by the materiel developer. FAT includes pre-production and initial production testing conducted to ensure that the contractor can furnish a product that meets the established technical criteria. (DAU's *Test and Evaluation Management Guide*)

Follow-on Operational Test and Evaluation (FOT&E)—FOT&E is the continuation of operational test and evaluation (OT&E) after IOT&E or QOT&E and is conducted only by AFOTEC. It answers specific questions about unresolved COIs and test issues; verifies the resolution of deficiencies or shortfalls determined to have substantial or severe impact(s) on mission operations; or completes T&E of those areas not finished during IOT&E or QOT&E.

Force Development Evaluation (FDE)—A type of OT&E performed by MAJCOM operational test organizations in support of MAJCOM-managed system acquisition-related decisions prior to initial fielding, or for MAJCOM sustainment or upgrade activities.

Foreign Comparative Test (FCT)—A T&E program centrally managed by OSD which provides funding for U.S. T&E of selected equipment items and technologies developed by allied or friendly

countries when such items or technologies are identified as having good potential to satisfy valid DOD requirements. (DOD 5000.3-M-2)

Full-Up, System-Level Testing—Testing that fully satisfies the statutory requirement for "realistic survivability testing" or "realistic lethality testing" as defined in Title 10 §2366. (*Defense Acquisition Guidebook*)

***Increment—**A militarily useful and supportable operational capability that can be effectively developed, produced or acquired, deployed, and sustained. Each increment of capability will have its own set of threshold and objective values set by the user. (CJCSI 3170.01 and AFI 10-601) **Note**: Generally, only increments are fielded according to DODI 5000.02, CJCSI 3170.01, and AFI 63-101.

Information Support Plan (ISP)—The identification and documentation of information needs, infrastructure support, IT and NSS interface requirements and dependencies focusing on net-centric, interoperability, supportability and sufficiency concerns. (DODI 4630.8)

Initial Operational Test and Evaluation (IOT&E)—See Operational Test and Evaluation.

***Integrated Testing—**The collaborative planning and collaborative execution of test phases and events to provide shared data in support of independent analysis, evaluation and reporting by all stakeholders, particularly the developmental (both contractor and government) and operational test and evaluation communities.

***Integrated Test Concept (ITC)—**An outline of an executable test approach, validated objectives, and known requirements for all testing on a program, to include initial descriptions of test scenarios, test locations, exercises, T&E methodologies, operational impacts and issues, and projections for future capabilities. The ITC supports the development of test plans that are integrated using a systems engineering approach.

Integrated Test Team (ITT)—A cross-functional team of empowered representatives from multiple disciplines and organizations and co-chaired by operational testers and the program manager. The ITT is responsible for developing the T&E strategy and TEMP, assisting the acquisition community with T&E matters, and guiding the development of test plans that are integrated. **Note**: The ITT is the Air Force equivalent to the T&E Working Integrated Product Team (T&E WIPT) described in the *Defense Acquisition Guidebook.*

Joint Test and Evaluation (JT&E)—An OSD-sponsored T&E program conducted among more than one military Service to provide T&E information on combat operations issues and concepts. JT&E does not support system acquisition. (DODI 5010.41)

Lethality—The capability of a munition or directed energy weapon to cause damage that will cause the loss or a degradation in the ability of a target system to complete its designated mission(s). (*Defense Acquisition Guidebook*)

Live Fire Test and Evaluation (LFT&E)—The firing of actual weapons (or surrogates if actual weapons are not available) at components, subsystems, sub-assemblies, and/or full-up, system-level targets or systems to examine personnel casualties, system vulnerabilities, or system lethality; and the evaluation of the results of such testing. (*Defense Acquisition Guidebook*)

Logistics Support Elements—A composite of all support considerations necessary to ensure the effective and economical support of a system for its life cycle. It is an integral part of all other aspects of system acquisition and operation. (JP 1-02) **Note*:*** The ten logistics support elements are manpower, personnel, maintenance, supportability, systems engineering, data management, supply, transportation, configuration management, and training. Formerly known as Integrated Logistics Support. (AFI 10-602)

Logistics Supportability—The degree to which the planned logistics support allows the system to meet its availability and wartime usage requirements. Planned logistics support includes the following: test, measurement, and diagnostic equipment; spare and repair parts; technical data; support facilities; transportation requirements; training; manpower; and software. (*Defense Acquisition Guidebook*)

Logistics Test and Evaluation—The test methodology, criteria, and tools for evaluating and analyzing the ten logistics support elements as they apply to a system under test. The objective is to influence the design through applying the logistics support elements as early as possible in the acquisition cycle. This testing integrates the evaluation and analysis efforts of RM&A, human factors engineering, and logistics test, and is an integral part of T&E reports.

Lot Acceptance Test (LAT)—A test based on a sampling procedure to ensure that the product retains its quality. No acceptance or installation should be permitted until this test for the lot has been successfully completed. (*Glossary, Defense Acquisition Acronyms and Terms*, and DAU's *Test and Evaluation Management Guide*)

Low-Rate Initial Production (LRIP)—Production of the system in the minimum quantity necessary (1) to provide production-configured or representative articles for operational tests pursuant to §2399; (2) to establish an initial production base for the system; and (3) to permit an orderly increase in the production rate for the system sufficient to lead to full-rate production upon the successful completion of operational testing. **Note*:*** The LRIP quantity should not exceed 10 percent of the total number of articles to be produced as determined at the milestone B decision. (Title 10 §2400)

Maintainability—The capability of an item to be retained in or restored to a specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and routines, at each prescribed level of maintenance and repair. (*Defense Acquisition Guidebook*)

MAJCOM-Directed Acquisition Program—An acquisition program originated by and directed at the MAJCOM level.

Major Munitions Program—See Covered System.

Measurable—Having qualitative or quantitative attributes (e.g., dimensions, velocity, capabilities) that can be ascertained and compared to known standards. (See Testable.)

Measure of Effectiveness (MOE)—A qualitative or quantitative measure of a system's performance or a characteristic that indicates the degree to which it performs the task or meets a requirement under specified conditions. MOEs should be established to measure the system's capability to produce or accomplish the desired result.

Measure of Performance—A quantitative measure of a system's capability to accomplish a task. Typically in the area of physical performance (e.g., range, velocity, throughput, payload).

Measure of Suitability (MOS)—A quantitative or qualitative measure of a system's capability to support mission or task accomplishment with respect to reliability, availability, maintainability, transportability, supportability, training, and other suitability considerations.

Military Utility—The military worth of a system performing its mission in a competitive environment including versatility (or potential) of the system. It is measured against the operational concept, operational effectiveness, safety, security, and cost/worth. Military utility estimates form a rational basis for making management decisions. (*Glossary, Defense Acquisition Acronyms and Terms*)

Military Utility Assessment (MUA)—A determination of how well a capability or system in question responds to a stated military need, to include a determination of its potential effectiveness and suitability in performing the mission. It is a "characterization" of the capability or system as determined by measures of effectiveness, measures of suitability, measures of performance, and other operational

considerations as indicators of military utility, as appropriate, and answers the questions, "What can it do?" and "Can it be operated and maintained by the user?"

Multi-Service—Involving two or more military Services or DOD components.

Multi-Service Operational Test and Evaluation (MOT&E)—OT&E conducted by two or more Service OTAs for systems acquired by more than one Service. MOT&E is conducted according to the T&E directives of the lead operational test organization, or as agreed in a memorandum of agreement between the participants. **Note**: MAJCOM operational test organizations may at times be responsible for conducting MOT&E in lieu of AFOTEC.

Objective—An operationally significant increment above the threshold. An objective value may be the same as the threshold when an operationally significant increment above the threshold is not significant or useful. (AFI 10-601)

Operational Assessment (OA)—An analysis of progress toward operational capabilities made by an operational test organization, with operator support as required, on other than production systems. The focus of an operational assessment is on significant trends noted in development efforts, programmatic voids, areas of risk, adequacy of requirements, and the ability of the program to support adequate operational testing. Operational assessments may be made at any time using technology demonstrators, prototypes, mockups, engineering development models, or simulations, but will not substitute for the dedicated OT&E necessary to support full production decisions.

***Operational Effectiveness—**Measure of the overall ability to accomplish a mission when used by representative personnel in the environment planned or expected for operational employment of the system considering organization, doctrine, supportability, survivability, vulnerability, and threat. (CJCSI 3170.01)

***Operational Environment—**A composite of the operational conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 1-02, JP 3-0)

Operational Suitability—The degree to which a system can be placed and sustained satisfactorily in field use with consideration given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, environmental, safety and occupational health risks, human factors, habitability, manpower, logistics, supportability, logistics supportability, natural environmental effects and impacts, documentation, and training requirements. (CJCSI 3170.01)

Operational Test Agency (OTA)—An independent agency reporting directly to the Service Chief that plans and conducts operational tests, reports results, and provides evaluations of overall operational capability of systems as determined by effectiveness, suitability, and other operational considerations. **Note**: Each Service has one designated OTA: The Air Force has the Air Force Operational Test and Evaluation Center (AFOTEC). The Navy has the Operational Test and Evaluation Force (OPTEVFOR). The Army has the Army Test and Evaluation Command (ATEC). The Marine Corps has the Marine Corps Operational Test and Evaluation Agency (MCOTEA).

Operational Test Organization—The generic term for any organization that conducts operational testing as stated in its mission directive.

Operational Test and Evaluation (OT&E)—1. The field test, under realistic combat conditions, of any item of (or key component of) weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability of the weapons, equipment, or munitions for use in combat by typical military users; and the evaluation of the results of such test. (Title 10 §139(a)(2)) **2.** Testing and evaluation conducted in as realistic an operational environment as possible to estimate the prospective system's operational effectiveness, suitability, and operational capabilities. In addition, OT&E pro-

vides information on organization, personnel requirements, doctrine, and tactics. It may also provide data to support or verify material in operating instructions, publications, and handbooks. **Note:** The generic term OT&E is often substituted for IOT&E, QOT&E, FOT&E, OUE, or FDE, and depending on the context, can have the same meaning as those terms.

Sufficiency of Operational Test Review (SOTR)—An examination by MAJCOM operational testers of all available test data to: 1) determine if adequate testing has been accomplished for programs of limited scope and complexity; and 2) to assess the risk of fielding or production without a dedicated OT&E.

Operational Testing—A generic term describing the test, evaluation, and assessment options and levels of effort available to an operational test organization.

***Operational Utility Evaluation (OUE)—**AFOTEC or MAJCOMs may conduct OUEs whenever a dedicated operational test and evaluation event is required, but the full scope and rigor of a formal IOT&E, QOT&E, FOT&E, or FDE is not appropriate or required. OUEs may be used to support operational decisions (e.g., fielding a system with less than full capability) or acquisition-related decisions (e.g., low-rate production) when appropriate throughout the system lifecycle. OUEs will not be used when IOT&E, QOT&E, FOT&E or FDE are more appropriate per existing guidance and definitions.

Operator—Refers to the operating command which is the primary command operating a system, subsystem, or item of equipment. Generally applies to those operational commands or organizations designated by Headquarters, US Air Force to conduct or participate in operations or operational testing, interchangeable with the term "using command" or “user.” In other forums the term “warfighter” or “customer” is often used. (AFI 10-601)

Oversight—Senior executive-level monitoring and review of programs to ensure compliance with policy and attainment of broad program goals.

Oversight Program—A program on the OSD T&E Oversight List for DT&E, LFT&E, and/or OT&E. The list includes all major defense acquisition programs (MDAP) (e.g., ACAT I) and any other programs selected for OSD T&E Oversight according to Title 10 §2430(a)(1). These programs require additional documentation and have additional review, reporting, and approval requirements.

Participating Test Organization (PTO)—Any test organization required to support a lead test organization by providing specific T&E data or resources for a T&E program or activity.

Pre-Production Qualification Test (PPQT)—The formal contractual tests that ensure design integrity over the specified operational and environmental range. These tests usually use prototype or preproduction hardware fabricated to the proposed production design specifications and drawings. Such tests include contractual reliability and maintainability demonstration tests required prior to production release. (*Glossary, Defense Acquisition Acronyms and Terms,* and DAU’s *Test and Evaluation Management Guide*)

Production Acceptance Test and Evaluation (PAT&E)—Test and evaluation of production items to demonstrate that items procured fulfill requirements and specifications of the procuring contract or agreements. (DAU’s *Test and Evaluation Management Guide*)

Production Qualification Test (PQT)—A technical test conducted prior to the full rate production decision to ensure the effectiveness of the manufacturing processes, equipment, and procedures. These tests are conducted on a number of samples taken at random from the first production lot, and are repeated if the manufacturing process or design is changed significantly, or when a second source is brought on line. (*Glossary, Defense Acquisition Acronyms and Terms,* and DAU’s *Test and Evaluation Management Guid*e)

Program Manager (PM)—1. The designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. The PM shall be accountable for credible cost, schedule, and performance reporting to the MDA. (DODD 5000.1) **2**. Applies collectively to system program directors, product group managers, single managers, acquisition program managers, and weapon system managers. Operating as the single manager, the PM has total life cycle system management authority. **Note**: This AFI uses the term "PM" for any designated person in charge of acquisition activities, to include those prior to MS A (i.e., before a technology project is officially designated an acquisition program).

Prototype—A model suitable for evaluation of design, performance, and production potential. (JP 1-02) **Note*:*** The Air Force uses prototypes during development of a technology project or acquisition program for verification or demonstration of technical feasibility. Prototypes are not usually representative of the final production item.

Qualification Operational Test and Evaluation (QOT&E)—A tailored type of IOT&E performed on systems for which there is little to no RDT&E-funded development effort. Commercial-off-the-shelf (COTS), non-developmental items (NDI), and government furnished equipment (GFE) are tested in this manner.

Qualification Test and Evaluation (QT&E)—A tailored type of DT&E for which there is little to no RDT&E-funded development effort. Commercial-off-the-shelf (COTS), non-developmental items (NDI), and government furnished equipment (GFE) are tested in this manner.

Recoverability—Following combat damage, the ability to take emergency action to prevent loss of the system, to reduce personnel casualties, or to regain weapon system combat mission capabilities. (*Defense Acquisition Guidebook*)

***Relevant Environment—**The specific subset of the operational environment that is required to demonstrate critical "at risk" aspects of the final product performance in an operational environment. It is an environment that focuses specifically on stressing the technology in question. Not all systems, subsystems, and/or components need to be operated in the operational environment in order to satisfactorily address performance margin requirements. **Note**: A relevant environment is required for Technology Readiness Levels 5 and 6.

Reliability—The capability of a system and its parts to perform its mission without failure, degradation, or demand on the support system. (*Defense Acquisition Guidebook*)

Research, Development, Test, and Evaluation (RDT&E)—The type of funding appropriation (3600) intended for research, development, test, and evaluation efforts. (DOD 7000.14-R, Vol 2A, and AFI 65-601, Vol I) **Note***:* The term "research and development" (R&D) broadly covers the work performed by a government agency or the private sector. "Research" is the systematic study directed toward gaining scientific knowledge or understanding of a subject area. "Development" is the systematic use of the knowledge and understanding gained from research for the production of useful materials, devices, systems, or methods. RDT&E includes all supporting test and evaluation activities.

Responsible Test Organization (RTO)—The lead government developmental test organization on the ITT that is qualified to conduct and responsible for overseeing DT&E.

Risk—1. A measure of the inability to achieve program objectives within defined cost and schedule constraints. Risk is associated with all aspects of the program, e.g., threat, technology, design processes, or Work Breakdown Structure elements. It has two components: the probability of failing to achieve a particular outcome, and the consequences of failing to achieve that outcome. (*Glossary, Defense Acquisition Acronyms and Terms*) **2.** Probability and severity of loss linked to hazards. (JP 1-02)

Seamless Verification—A concept for structuring test and evaluation (T&E) to more effectively support the requirements and acquisition processes so new capabilities are brought to operators more quickly. Seamless verification promotes using integrated testing procedures coupled with tester collaboration in early requirements definition and system development activities. It shifts T&E away from the traditional "pass-fail" model to one of providing continuous feedback and objective evaluations of system capabilities and limitations throughout system development.

Specification—A document intended primarily for use in procurement which clearly and accurately describes the essential technical requirements for items, materials, or services, including the procedures by which it will be determined that the requirements have been met. Specifications may be prepared to cover a group of products, services, or materials, or a single product, service, or material, and are general or detail specifications. (*Glossary, Defense Acquisition Acronyms and Terms*)

Survivability—The capability of a system and crew to avoid or withstand a man-made hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission. Survivability consists of susceptibility, vulnerability, and recoverability. (*Defense Acquisition Guidebook*)

Susceptibility—The degree to which a weapon system is open to effective attack due to one or more inherent weaknesses. (Susceptibility is a function of operational tactics, countermeasures, probability of enemy fielding a threat, etc.) Susceptibility is considered a subset of survivability. (*Defense Acquisition Guidebook*)

Sustainment—1. The provision of personnel, logistic, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective. (JP 1-02) **2.** The Service's ability to maintain operations once forces are engaged. (AFDD 1-2) **3.** Activities that sustain systems during the operations and support phases of the system life cycle. Such activities include any investigative test and evaluation that extends the useful military life of systems, or expands the current performance envelope or capabilities of fielded systems. Sustainment activities also include T&E for modifications and upgrade programs, and may disclose system or product deficiencies and enhancements that make further acquisitions necessary.

Tactics Development and Evaluation (TD&E)—TD&E is a tailored type of FDE specifically designed to further exploit doctrine, system capabilities, tactics, techniques, and procedures during the sustainment portion of the system life cycle. TD&Es normally identify non-materiel solutions to tactical problems or evaluate better ways to use new or existing systems.

Testable—The attribute of being measurable with available test instrumentation and resources. **Note*:*** Testability is a broader concept indicating whether T&E infrastructure capabilities are available and capable of ***measuring*** the parameter. The difference between testable and measurable may indicate a test limitation. Some requirements may be ***measurable*** but not ***testable*** due to T&E infrastructure shortfalls, insufficient funding, safety, or statutory or regulatory prohibitions.

Test and Evaluation (T&E)—The act of generating empirical data during the research, development or sustainment of systems, and the creation of information through analysis that is useful to technical personnel and decision makers for reducing design and acquisition risks. The process by which systems are measured against requirements and specifications, and the results analyzed so as to gauge progress and provide feedback.

Test and Evaluation Master Plan (TEMP)—Documents the overall structure and objectives of the T&E program. It provides a framework within which to generate detailed T&E plans and it documents schedule and resource implications associated with the T&E program. The TEMP identifies the necessary developmental, operational, and live-fire test activities. It relates program schedule, test management strategy and structure, and required resources to: COIs; critical technical parameters; objectives

and thresholds documented in the requirements document; and milestone decision points. (DAU's *Test and Evaluation Management Guide)* **Note:** All references to the TEMP in this AFI include the SAMP or LCMP, whichever is applicable.

Test and Evaluation Organization—Any organization whose designated mission includes test and evaluation.

Test and Evaluation Strategy—The overarching integrated T&E outline for the entire acquisition program that describes how operational capability requirements will be tested and evaluated in support of the acquisition strategy. Developed prior to Milestone A, the T&E strategy addresses modeling and simulation, risk and risk mitigation, development of support equipment, and identifies how system concepts will be evaluated against mission requirements, among other things. The T&E strategy is a precursor to the test and evaluation master plan.

Test Deferral—The movement or delay of testing and/or evaluation of a specific critical technical parameter, operational requirement, or critical operational issue to a follow-on increment or later test period. A test deferral does not change the requirement to test a system capability or function.

Test Integrated Product Team (TIPT)—Any temporary group consisting of testers and other experts who are focused on a specific test issue or problem. There may be multiple TIPTs for each acquisition program.

Test Limitation—Any condition that hampers but does not preclude adequate test and/or evaluation of a critical technical parameter, operational requirement, or critical operational issue during a T&E program.

Test Resources—A collective term that encompasses all elements necessary to plan, conduct, and collect/analyze data from a test event or program. Elements include test funding and support manpower (including temporary duty costs), test assets (or units under test, test asset support equipment, technical data, simulation models, test beds, threat simulators, surrogates and replicas, special instrumentation peculiar to a given test asset or test event, targets, tracking and data acquisition, instrumentation, equipment for data reduction, communications, meteorology, utilities, photography, calibration, security, recovery, maintenance and repair, frequency management and control, and base/facility support services. (DAU's *T&E Management Guide*)

Test Team—A group of testers and other experts who carry out integrated testing according to a specific test plan. **Note**: A combined test force (CTF) is one way to organize a test team for integrated testing.

Threshold—A minimum acceptable operational value below which the utility of the system becomes questionable.

User—See Operator.

Verification, Validation and Accreditation (VV&A)—VV&A is a continuous process in the life cycle of a model or simulation as it gets upgraded or is used for different applications. (AFI 16-1002)

Verification—Process of determining that M&S accurately represent the developer's conceptual description and specifications.

Validation—Rigorous and structured process of determining the extent to which M&S accurately represents the intended "real world" phenomena from the perspective of the intended M&S use.

Accreditation—The official determination that a model or simulation is acceptable for use for a specific purpose.

Vulnerability—The characteristic of a system that causes it to suffer a definite degradation (loss or reduction of capability to perform its designated mission) as a result of having been subjected to a certain (defined) level of effects in an unnatural (man-made) hostile environment. Vulnerability is considered a subset of survivability. (*Defense Acquisition Guidebook*)

Waiver—A decision not to conduct OT&E required by statute or policy.

Attachment 2

INFORMATION REQUIREMENTS FOR OSD T&E OVERSIGHT PROGRAMS

A2.1. Space acquisition programs exempted from compliance with the DOD 5000-series must consult *NSS 03-01* for modified reporting information.

Table A2.1. Information Requirements for OSD T&E Oversight Programs.

Item of Information	HQ USAF OPRs	Due to OSD[2]	Comments
TEMPs[1] **a.** Draft TEMPs[3] **b.** Service-approved TEMPs **c.** Newly-designated TEMPs	OPR: PEM[6] OCR: AF/TEP	**a.** 90 days prior to milestone **b.** 45 days prior to milestone, and again at 10 days prior if OSD sends back for changes **c.** 120 days after program designation for OSD T&E Oversight	OSD (i.e., USD(AT&L) and DOT&E) approval required prior to milestones and major decision reviews. Updates required for significant changes.
T&E Strategy[3]	OPR: PEM OCR: AF/TEP	MS A. Same due dates as for the TEMP.	USD(AT&L) and DOT&E approval required. Not required for programs starting at MS B.
LFT&E Waivers and Alternate LFT&E Strategies and Plans (if required)	OPR: PEM OCR: AF/TEP	Prior to MS B	DOT&E sends notification to Congress prior to MS B.
a. Test Concept Briefings for IOT&E, QOT&E, OUE, or FOT&E **b.** Test Concept Briefings for OAs For FDEs, see Note 7.	AF/TEP	**a.** IOT&E, QOT&E, OUE, or FOT&E Test Concept Briefings 120 days prior to test start **if required by DOT&E.** **b.** OA test concept briefings should be provided a minimum of 30 days prior to test start.	a. Requirement stated in *Defense Acquisition Guidebook* (not stated for OAs).
a. Test Plans for IOT&E, QOT&E, OUE, or FOT&E (Service-approved); or **b**. Test Plans for OAs (Service approved)	AF/TEP	**a.** Required 60 days prior to start of IOT&E, QOT&E, OUE, or FOT&E. **b.** No minimum requirement for OA plans. **Note*:*** DOT&E may request an additional briefing on test plans prior to starting these tests.	**a.** and **b.** DOT&E written approval required before IOT&E, QOT&E, OUE, FOT&E, or OA may start. Report major revisions to DOT&E. **Note**: A briefing **may** be required on these plans at DOT&E's discretion.
FDE Plans[7]	AF/TEP	60 days prior to start of designated FDEs.[4, 7]	DOT&E will direct which subparts of OT&E Oversight programs require approval.
Significant Test Event Reports	a. PEM for DT&E b. AF/TEP for OT&E	24 hours after event	Events and addressees as listed in TEMP and test plans.
Final Reports and Briefings: **a.** For OA, IOT&E, QOT&E, OUE, and FOT&E **b.** For FDE[7]	AF/TEP	**a.** and **b.** Reports due not later than 30 days prior to the decision review according to paragraph **7.5.2**. For multi-Service tests, reports are due 90 days after last test event.	A single report is required for multi-Service programs. Final results briefings will be provided as requested.
LFT&E Reports	OPR: PEM	45 days prior to the FRP deci-	Due to DOT&E.

	OCR: AF/TEP	sion review.	
FDE Final Reports and Briefings	AF/TEP	Same as for OT&E Final Reports and Briefings.	Same as for OT&E Final Reports and Briefings.
Synopsis Reports of EW Programs	AF/TEP	Due annually by 15 Nov to USD(AT&L)/DS.	Congressionally required.[5]

Notes:

1. All references to TEMPs in this table include the SAMP or LCMP, whichever is applicable. For SAMPs that remain active past 1 May, 2005, only the T&E portions require AFOTEC/CC and HQ USAF/TE coordination, and USD(AT&L)/DS and DOT&E approval.

2. All days are "calendar" days. Time periods and dates are "Not Later Than" due dates to OSD.

3. "Draft TEMP" means that all signatures below HQ USAF level are complete according to paragraphs **5.14.2** through **5.14.4**.

4. Only for programs on OSD OT&E Oversight.

5. Required by P.L. 103-160 §220(a).

6. The PEM is the person from the Secretariat or Air Staff designated in the PMD who has overall responsibility for a program element and who harmonizes program documentation.

7. Selected FDEs require DOT&E oversight (see paragraphs **4.6** and **4.7**) and will follow the same planning, briefing, and reporting guidance in paragraph **6.7**.